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DOE ORDER# 47001
94 RF 09165

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September 1, 1994

94-RF-09165

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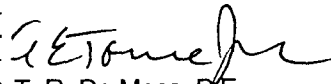
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COMPLETION OF MILESTONE 129030140 - TRD-050-94

Action Provide Comments by September 5, 1994

Enclosed is the Draft Implementation Plan for the Environmental Restoration Decontamination and Decommissioning (D&D) Program Per discussions with your organization, this document meets the deliverable to satisfy milestone 129030140

This document is simultaneously undergoing internal review The schedule for submittal of the final draft is September 30, 1994 Please provide your comments by September 5, 1994 to support completion of the final draft


T R De Mass, P E
Senior Program Manager
Decontamination and Decommissioning
EG&G Rocky Flats, Inc

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**ROCKY FLATS PLANT
DECONTAMINATION AND DECOMMISSIONING
IMPLEMENTATION PLAN**

for

ENVIRONMENTAL RESTORATION MANAGEMENT PROGRAM

AUGUST 1994

Draft 0

Prepared for

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LIST OF ACRONYMS AND ABBREVIATIONS

AEA	Atomic Energy Act	1
ALARA	as low as reasonably achievable	2
ARARs	applicable or relevant and appropriate requirements	3
CCCP	Configuration Change Control Program	4
CDH	Colorado Department of Health	5
CDR	Conceptual Design Report	6
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act	7
COEM	Conduct of Engineering Manual	8
CTR	contract technical representative	9
CWA	Clean Water Act	10
CATEX	categorical exclusion	11
D&D	decontamination and decommissioning	12
DCP	design criteria package	13
DOE	Department of Energy	14
DOE-RFETS	Department of Energy Rocky Flats Environmental Technology Site	15
DQOs	data quality objectives	16
EA	Environmental Assessment	17
ECs	engineering change	18
EIS	Environmental Impact Statement	19
EPA	Environmental Protection Agency	20
ER	Environmental Restoration	21
ERM	Environmental Restoration Management	22
ES&H	environmental, safety, and health	23
FONSI	finding of no significant impact	24
FSAD	Final Safety Analysis Document	25
FSAR	Final Safety Analysis Report	26
HMTA	Hazardous Materials Transportation Act	27
HQ	Headquarters	28
ICE	independent cost estimate	29
IHSS	Individual Hazardous Substance Site	30
IVC	independent verification contractor	31
IWCP	Integrated Work Control Program	32
LDR	Land Disposal Restrictions	33
LLMW	low level mixed-waste	34
LLW	low level (radioactive) waste	35
NEPA	National Environmental Policy Act	36
NESHAP	National Emissions Standards for Hazardous Air Pollutants	37
NPDES	National Pollutant Discharge Elimination System	38
NPL	National Priority List	39
OSHA	Occupational Safety and Health Act	40
OU	Operable Unit	41
PCB	polychlorinated biphenyls	42
PM	project manager	43
PMP	Project Management Plan	44

PQAM	Project Quality Assurance Manager	1
PSAD/PSAR	Preliminary Safety Analysis Documentation/Preliminary Safety Analysis Report	2
		3
PSR	Preliminary Safety Requirement	4
QA	Quality Assurance	5
QAP	Quality Assurance Plan	6
QAPjP	Quality Assurance Project Plan	7
QAPP	Quality Assurance Program Plan	8
QIP	Quality Improvement Process	9
RA	Remedial Action	10
RCRA	Resource Conservation and Recovery Act	11
RFCA	Rocky Flats Cleanup Agreement	12
RFI/RI	RCRA Facility Investigation/Remedial Investigation	13
RFP	Rocky Flats Plant	14
RI	Remedial Investigation	15
ROD	Record of Decision	16
SA	Safety Assessment	17
SAP	Sampling and Analysis Plan	18
SDWA	Safe Drinking Water Act	19
SMP	Subproject Management Plan	20
SNM	Special nuclear material	21
SPM	Subproject Project Manager	22
SWDA	Safe Drinking Water Act	23
SURB	Site Use Review Board	24
TRU	Transuranic waste	25
TSCA	Toxic Substance Control Act	26
WBS	Work Breakdown Structure	27
WMP	Waste Management Plan	28
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1.0 INTRODUCTION

This implementation plan provides specific guidance for conducting decontamination and decommissioning (D&D) projects (referred to as subprojects) at the Rocky Flats Environmental Technology Site (RFETS) as managed by EG&G Environmental Restoration Management (ERM). D&D subprojects will be managed within the Environmental Restoration (ER) Major Site Acquisition (MSA) Project as implemented through the ER Management Implementation Plan (MIP) and associated Implementation Plan and Procedures (IPP) documents.

D&D projects contain unique challenges which are different from management requirements associated with implementing capital upgrade projects and conducting soil and ground water remediation. Therefore this D&D IPP coordinates the similar requirements of ER subprojects (contained in the other ER-MSA/MIP IPs) with the D&D-specific management requirements.

1.1 Purpose

The purpose of this document is to provide overall management guidance and consistent methodology to D&D Project Managers (PMs) and project personnel in carrying out their responsibilities within the ER Program. This implementation plan and procedures (IPP) document is a subtier planning document under the ER-MSA Contractor Implementation Plans and Procedures Program. The D&D IPP supplements the ER Program Plan and is a summary of the elements of the D&D project to be executed.

The primary guidance used in developing this plan includes the Environmental

Restoration and Waste Management (EM)-40 D&D Guidance Manual, U S Department of Energy (DOE) Order 4700 1, and DOE Order 5820 2A. The work process integrates the EM-40 D&D Guidance Manual phased process with a graded approach to the requirements of DOE Orders 4700 1 and 5820 2A. Figure 1-1 illustrates the overall D&D logic diagram.

1.2 Scope

The scope of this document encompasses surplus facilities at RFETS which have either have completed deactivation activities or have been accepted by EM-40 into the D&D subproject.

The anticipated scope of the D&D subproject includes approximately 400 separate retired, deactivated, transitional, and active facilities as individual subprojects. The D&D Project also includes process equipment (such as process and storage tanks), ventilation systems, ancillary filter houses and effluent stacks, and security devices such as fencing and guard posts. The facilities include laboratories and production facilities (some with heavily contaminated glove boxes), effluent treatment facilities, hazardous and mixed waste storage facilities, fabrication shops, and numerous support facilities.

The buildings have been grouped into "complexes" based upon the functional use of each structure during the production of nuclear weapons components at RFETS. The three categories of complexes are plutonium, non-plutonium, and support. In general, this segregation refers to the primary type of radiological contamination.

DECONTAMINATION and DECOMMISSIONING

Logic Flow Diagram

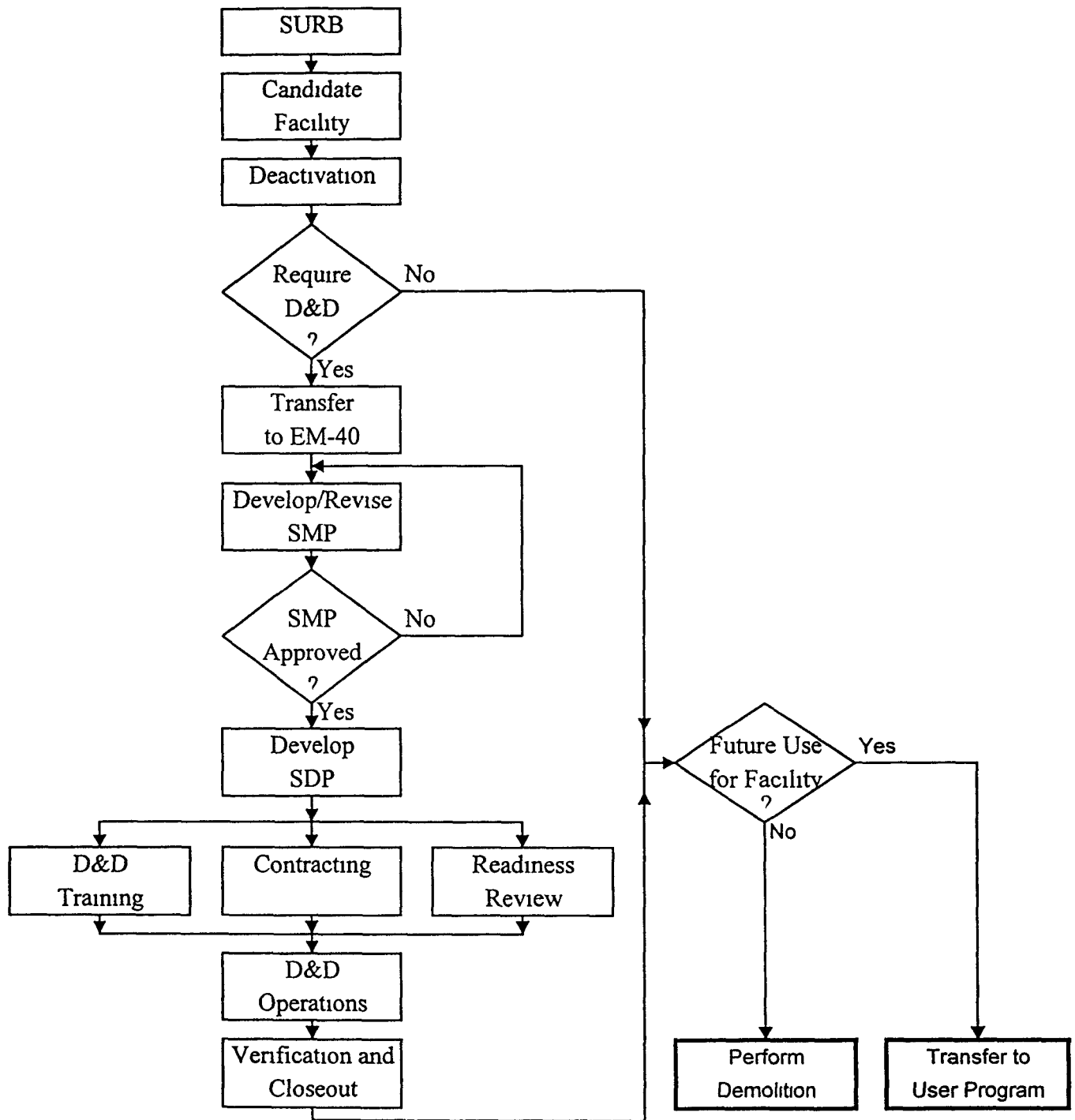


Figure 1-1

expected "Plutonium" refers to plutonium or transuranic contamination "Non-plutonium" refers to contamination from other radionuclides, primarily uranium and associated non-radioactive beryllium "Support" refers to either no contamination or only hazardous material contamination Both plutonium and non-plutonium buildings may be contaminated with hazardous materials in addition to their primary contaminants

During characterization surveys, if a room within a building is found to be contaminated with plutonium, the entire building will be included within the plutonium complex However, if a building previously included within the plutonium complex is found through characterization not to be contaminated with plutonium or other actinides, then the building will be grouped into the appropriate complex Non-plutonium buildings will be addressed similarly

A facility may be designated a D&D subproject if it has been declared surplus due to loss of operational mission and/or loss of programmatic value (deterioration, obsolescence) The facility is added to a Master List of Surplus Facilities and is reviewed by the Site Use Review Board (SURB) If the SURB identifies a use for the existing facility, the current program and the requesting program will negotiate a transfer If the SURB fails to identify a current or future use for the facility, it then enters the planning process for transfer to the D&D subproject, followed by decontamination, decommissioning, and/or demolition

Because the D&D of entire facilities at the RFETS will probably be deferred until a process for conducting complex D&D subprojects has been established, D&D of

individual buildings or rooms will be considered and performed when cost-effective and otherwise feasible This strategy is especially true when reducing the contamination level of a contaminated building or room which has no future use offers a large savings in surveillance and maintenance and health protection costs

Each D&D subproject includes the management process for evaluating both the risk and final disposition of surplus nuclear and/or support facility The subproject-specific subproject management plan (SMP) will include the characterization, hazards analysis, environmental review, and engineering documentation required to initiate and implement the D&D operations The subproject implementation steps include, but are not limited to declassifying or destroying sensitive equipment/components, decontaminating equipment and structures to allow their reuse and/or demolition and removal, ensuring worker safety and health protection, managing primary and secondary wastes to comply with regulatory requirements, and controlling residual hazards to ensure protection of the public and the environment

Activities may include

- Site/facility assessments,
- Regulatory and public involvement,
- Maintenance actions,
- Project scoping and engineering designs,
- D&D operations, and
- Closeout/verification

The scheduling of these activities must reflect consideration of risks to human health and the environment, facility planning, and impacts to regulatory commitments. Approved subproject baseline schedules and costs will be used as performance measures for these activities.

The D&D IP identifies the major elements of a D&D subproject, maximizes the integration of lessons learned from D&D activities within the DOE Complex into the RFP D&D Project, and defines the coordination and integration of other RFP organizations to perform D&D activities as safely, effectively, and efficiently as possible.

1.3 Objective

The objective of the D&D Subproject is to complete decontamination, equipment removal, dismantlement, and/or demolition and site stabilization activities on surplus facilities or sites that have been accepted into the D&D subproject baseline. This objective includes:

- Assisting in facility/site prioritization and selection to reduce the risk of (chemical, radiological, and or industrial) exposure to the public, onsite worker, and the environment,
- Ensuring the maintenance of EM-40-accepted facilities and sites in a safe configuration until cleanup activities are completed,
- Removing radiological and hazardous contaminants in a safe and controlled fashion,
- Performing segregation, recycling,

treatment, and disposal activities of D&D-generated wastes such that exposure risks posed to the public, onsite worker, and environment are lower than current facility conditions, and

- Meeting final facility and site reuse and/or site release requirements

These objectives of the D&D subproject are met in this IPP by

- Providing a definition of the RFETS D&D subproject scope, objectives, and authorities,
- Providing an overview of the RFETS D&D subproject planning process,
- Providing guidance for integration of regulatory, stakeholder, and economic development requirements,
- Providing a basis for the five-year plan (Activity Data Sheets - ADSs) and the fiscal year work plans,
- Identifying the project work flow process that will guide RFP D&D activities and to minimize the hazards and risks associated with a D&D activity, thus ensuring the health and safety of the RFETS work force and the general public,
- Developing D&D subproject documentation from inception through closeout, consistent with the ultimate end-use of a facility and the RFP site,
- Planning and performing D&D subprojects in a manner which

minimizes the quantity of waste generated, reduces contamination to the lowest level possible, and minimizes the generation of secondary waste, and

- Developing management and work processes that are consistent among D&D subprojects and meet the administrative and technical requirements of applicable DOE Orders, guidance, and other IPPs

1.4 Requirements Documents

The RFETS ER Project is designated as a Major System Acquisition (MSA), as defined in DOE Order 4240 1k, "Designation of MSAs and MPs " The classification of an MSA requires the use of DOE Order 4700 1 as a developmental document to define management requirements The ER MSA, however, is a modified MSA project in that it does not require the use of capital funding and utilizes the five-year planning activity data sheets (ADSs) and fiscal year work plans (FYWPs) as budget approval documents (as opposed to project validation and key decision points) This IPP uses DOE Order 4700 1 as a generalized guidance document for the conduct of a typical D&D subproject

The subproject should follow a logical progression from identification of the candidate facility through developing characterization, technical, cost, and scheduling baselines (EDGM ERP-3 10), safety analysis (EDGM ERP-3 6) [section 4 3], engineering and planning (including subcontracting if appropriate) [section 4 0], remediation and D&D operations [Sections 5 0 and 6 0], and ending with the subproject closeout and verification [Section 8 0]

Figure 1-2 illustrates the requirements document hierarchy that establishes the requirements for this implementation plan Additionally, this plan implements requirements defined in the following documents

- The Agreement-in-Principle (June 28, 1989),
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)(1980) as amended by the Superfund Amendments and Reauthorization Act (SARA)(1986),
- Federal Facility Compliance Agreement (January 22, 1991),
- Rocky Flats Interagency Agreement (January 22, 1996) (Future Rocky Flats Cleanup Agreement),
- National Environmental Policy Act (NEPA) (1969),
- Resource Conservation and Recovery Act of 1976 (RCRA),
- Title 29, Code of Federal Regulations (CFR) Part 1910 120 Hazardous Waste Operations and Emergency Response (March 6, 1990),
- DOE Order 4700 1, Project Management System,

DOCUMENT HIERARCHY

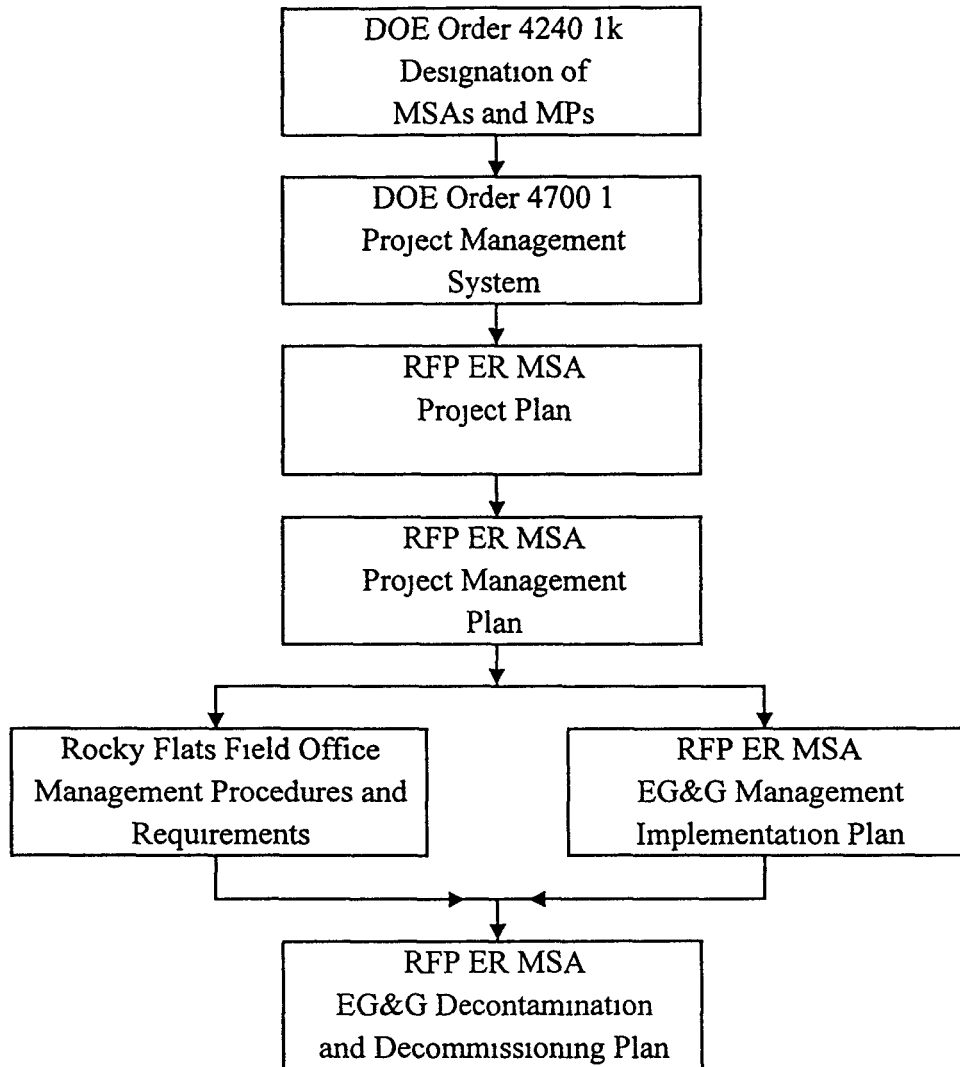


Figure 1-2

• DOE Order 4700 4, Baseline Change Control (January 27, 1993),	• Sitewide Environmental Compliance Plan (June 1994),	1 2 3
• DOE Order 5000 3A, Occurrence Reporting and Processing of Operations Information (September 20, 1991),	• DOE ER Project Management Plan,	4 5
• DOE Order 5400 1, General Environmental Protection Program,	• DOE-ERPD Quality Assurance Requirements and Description,	6 7 8
• DOE Order 5440 1E, Implementation of National Environmental Policy Act, as amended by SEN 15-90 (November 10, 1992),	• Waste Management Plan (Draft), EG&G (July 22, 1992),	9 10 11
• DOE Order 5480 4, Environmental Protection, Safety, and Health Protection Standards (May 16, 1989),	• Environmental Protection Management Plan, EG&G (June 30, 1993),	12 13 14 15
• DOE Order 5480 19, Conduct of Operations Requirements for DOE Facilities (July 9, 1990),	• EG&G RFP Quality Assurance Manual,	16 17 18
• DOE Order 5483 1A, Occupational Safety and Health Programs for DOE Contractor Employees at Government-Owned, Contractor-Operated Facilities (June 22, 1983),	• ERPD Quality Assurance Project Plan,	19 20 21
• DOE Order 5700 6C, Quality Assurance (August 21, 1991),	• ERPD Quality Assurance Program Description, and	22 23 24
• DOE Order 5700 7B, Work Authorization System (September 24, 1986),	• EG&G ERP Engineering Design Guidance Manual (EDGM) (September 30, 1993)	25 26 27 28
• DOE Order RFI 5700 6, Quality Assurance (March 18, 1992),	1.5 Procedural Interfaces	29 30
• Community Relations Plan (December 4, 1991),	This plan is one of 15 Implementation Plans and Procedures (IPPs) applicable to the RFP ER MSA The individual IPPs are detailed guidance documents used to define specific project management requirements This plan has direct interface with a number of other IPPs This interface is presented in Figure 1-3	31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46

IMPLEMENTATION PLANS and PROCEDURES INTERFACE

	Project Control Systems Description	Configuration Management Plan	Quality Assurance Plan	Administrative Control Plan	Health and Safety Plan	Public Outreach Plan	Design Management Plan	Test and Evaluation Plan	Acquisition Strategy Plan	Data Management Plan	Construction Management Plan	Operational Requirements Plan	Self-Assessment Plan	Decontamination and Decommissioning Plan
Project Control System Description														
Configuration Management Plan														
Quality Assurance Plan														
Administrative Control Plan														
Health and Safety Plan														
Public Outreach Plan														
Design Management Plan														
Test and Evaluation Plan														
Acquisition Strategy Plan														
Data Management Plan														
Construction Management Plan														
Operational Requirements Plan														
Self-Assessment Plan														
Decontamination and Decommissioning Plan	X	X	X		X		X	X		X	X	X	X	

Figure 1-3

2.0 PROGRAM MANAGEMENT

D&D at RFP will encompass the management or elimination of risks posed by surplus nuclear and/or support facilities. In general, the risks posed by these surplus facilities include radiological exposure, exposure to hazardous and toxic materials, and mechanical or industrial risk (collapse). Management of these risks includes reduction of hazardous and/or radiological contamination through decontamination, removal, and/or chemical or physical extraction.

A facility, building, or room (including process equipment) will become an active subproject in the D&D subproject (via EM-60 Deactivation) when the facility is no longer required to support the RFETS mission and no future user is identified for the facility, building, or room in its current state. The selection, prioritization, and implementation schedule for D&D subprojects will be based on the demonstrated need to reduce current or future risks, to reduce the surveillance and maintenance (S&M) costs at RFETS, and to allow facilities, equipment, and/or areas to be made available for alternate uses.

D&D program management addresses the following critical elements:

- Regulatory oversight requirements,
- Guidelines for planning, conducting, and implementing D&D subprojects,
- Quality Assurance Program Plan,
- Health and Safety documentation, and
- Protocols for the transfer of

landlord responsibilities and other program-level activities

2.1 DOE Rocky Flats Environmental Technology Site (RFETS) Management

RFETS has been designated the cognizant managing office with overall responsibility and authority for management of the RFETS ER Project. The Assistant Manager for Environmental Restoration (AMER) has appointed the Director, Environmental Restoration Division (ERD), as the ER Project Manager (ERPM). The PM is located at RFETS.

The ERD is designated as the Project Management Office (PMO). The PMO is responsible for the overall management of the RFETS ER Project. The PMO is directed by the PM and is assisted by contractors responsible for specific project functions.

The PMO is responsible for establishing the guidelines for the RFP D&D subproject and authorizing D&D subprojects through approval of programmatic and engineering plans. The PMO will interface with stakeholders to ensure integration and broad acceptance of the RFETS D&D Project (see Figure 2-1).

2.2 Environmental Restoration Division (Project Management Office)

The ERD is composed of three branches: the Remediation Branch, the Facilities/D&D Branch, and the Project Management Support Branch. These three branches provide the necessary management direction and oversight of the

DECONTAMINATION and DECOMMISSIONING Organizational Chart

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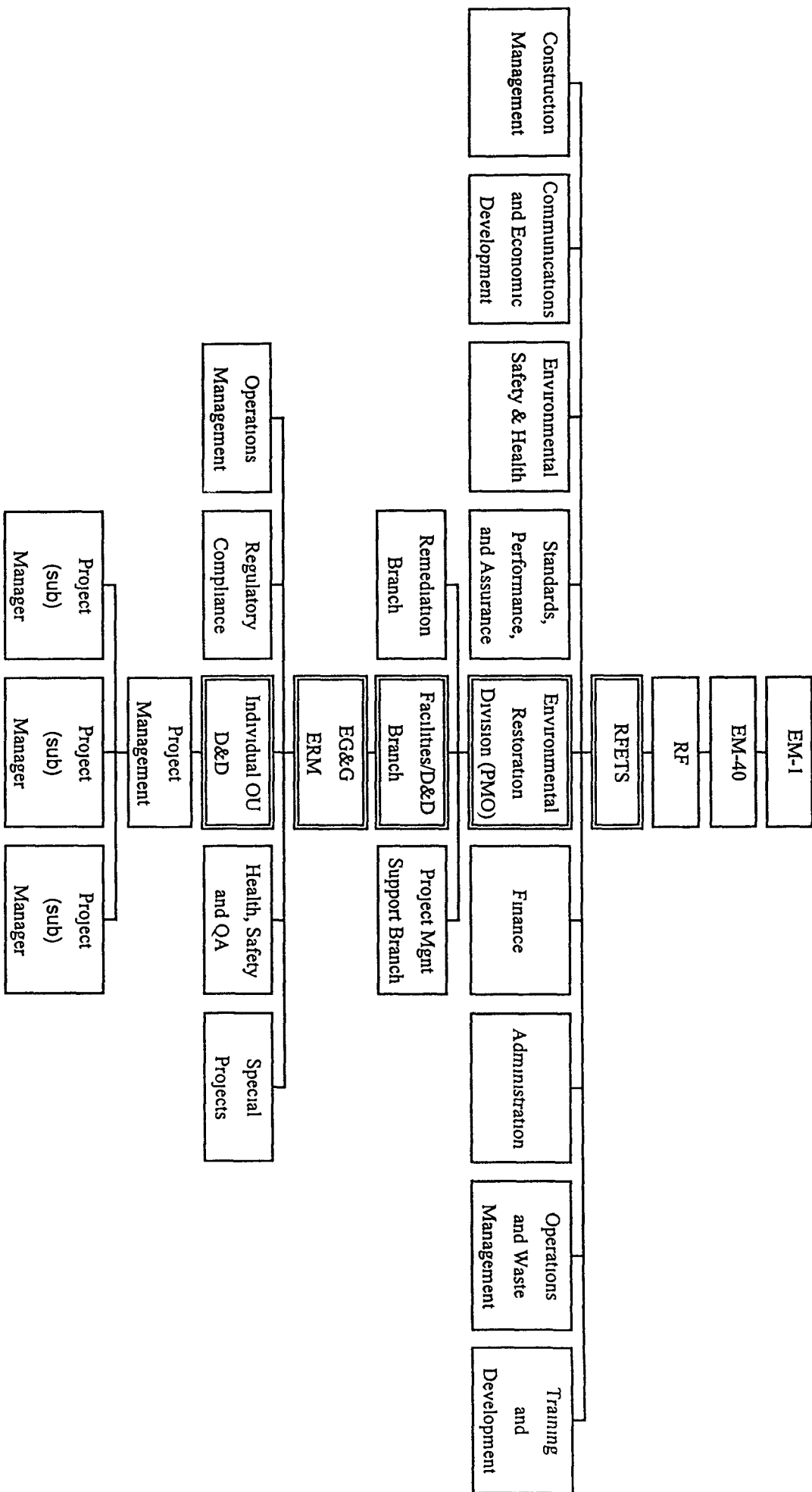


Figure 2-1

contractors performing under the ER scope of work

2.2.1 Facilities/D&D Branch

The Facilities/D&D Branch has responsibility for activities associated with plant facilities and the D&D of those facilities. Specific responsibilities include

- D&D facilities,
- Transition planning as related to D&D,
- S&M of remediated facilities,
- Characterization of contamination within facilities,
- D&D technology development, and
- Coordination of analysis for the NEPA, risk assessment, and Natural Resource Damage Assessment (NRDA)

The PM assigns staff resources to accomplish the responsibilities identified for this branch. The individual staff responsibilities include DOE actions necessary to ensure that requirements are met, as well as management oversight and direction of contractor resources applied to the effort.

The PM will have direct interface with the EG&G D&D Project organization. The PMO will oversee and approve D&D subprojects, the supporting documentation, and the development of a sitewide programmatic planning document.

2.2.2 Related Rocky Flats Support Groups

RFETS has overall responsibility for operations and projects conducted at RFP. To apply the efficient use of resources to the broad range of RFETS responsibilities, RFETS uses a matrix approach to supply support to specific projects or activities. The following RFETS offices will supply support services as required.

- Construction Management Office - for engineering design, construction services, and systems engineering,
- Communications and Economic Development Office - for reviewing and preparing community relations activities,
- Environmental, Safety, and Health Office - for health and safety protection programs for
 - the public,
 - the contractor, and
 - DOE personnel,
- Standards, Performance, and Assurance Office - for QA services,
- Finance Office - for fiscal services,
- Administration Office - for contract, human resources, and other non-monetary support services,
- Operations and Waste Management Office - for transportation, storage, and disposal (TSD) of waste generated as a result of D&D activities (unless treatment is conducted *in situ*), and

- Training and Development Office - for training and certification of project personnel to project requirements

2.3 EG&G Environmental Restoration Management (ERM)

The EG&G Environmental Restoration Program (ERP) is responsible for coordination and planning of all restoration activities at the RFETS including the D&D of facilities

2.4 EG&G D&D Project/Subproject Organization Roles and Responsibilities

The Industrial Operable Unit (OU) and Facility D&D is the cognizant EG&G organization for the D&D subproject implementation. The EG&G D&D PM is responsible for coordinating the activities performed by these groups and ensuring that the work is conducted in conformance with DOE and regulatory requirements as they apply to each subproject.

The EG&G D&D PM is also responsible for developing the programmatic planning and project reporting documents, ensuring that planning initiatives and resource requirements are identified and met, and for the day to day management of the D&D subprojects. The subtier EG&G D&D technical groups are responsible for the development and implementation of project-specific documentation as required. The following sections describe the specific industrial OU/facility D&D groups responsible for the subproject definition, planning, procurement, operations, and closeout.

2.4.1 Project Management Group

The Project Management Group is responsible for identifying and defining D&D subprojects. Specific tasks assigned to the Project Management Group are:

- Identifying and prioritizing subprojects to ensure integration with other RFETS activities and effective application of available funds,
- Developing subproject scopes, schedules, and costs,
- Maintaining subproject development schedules and performing cost control,
- Obtaining funding for subproject implementation,
- Performing subproject development reporting, and
- Providing support for developing compliance documentation

2.4.2 Project Manager(s)

The subproject (facility or site) project manager (SPM) reports to the Subproject (D&D) Project Manager and is responsible for management of subprojects in the assigned area. To carry out this function, each PM is responsible and has the authority for the development, execution, supervision, coordination, and integration of all aspects of the D&D subproject planning and management activities. The PMs are participants with the subproject staff in the development of the work plans that define the scope of each subproject task, schedule, budget, and deliverable they are required to meet. Resource

allocations are requested and approved from these plans by the Subproject PM. Additional resources from other EG&G organizations or in addition to the resource allocation in the ADSs/FYWP will be negotiated by the Subproject PM.

Each PM participates in the review of revisions to this IPP and reviews QA Plans and Procedures. Each PM must ensure that all procedures, regulations, codes, and standards are followed.

The PM is responsible for performing the following specific duties:

- Directing the subproject team including the Lead Discipline Engineers and others responsible for the execution of the subproject's scope of work,
- Delegating to project personnel specific responsibilities within the organization for technical criteria, reviews, and other related activities,
- Determining (with the assistance of the Lead Discipline Engineers) the detailed scope of work,
- Developing the project budget and schedule with the lead scheduler, cost control analyst, Lead Discipline Engineers, and other responsible persons on the subproject team,
- Reviewing and analyzing cost and schedule reports, developing variance analysis reports, and taking action, as required, to maintain project budgets and schedules,

- Maintaining a chronological record of the project history, and
- Implementing the project's QA Program Plan

2.4.3 Regulatory Compliance Group

The Regulatory Compliance Group is responsible for identifying, defining, and ensuring project and subproject compliance with applicable federal and state laws, and DOE and industry standards. Specific tasks assigned to the Regulatory Compliance Group are:

- Identifying, defining, and developing strategies for areas of compliance,
- Conducting independent subproject assessments and compliance verifications, and
- Supporting the PM and Operations to ensure that regulatory compliance is attained and maintained throughout the life of the subproject.

2.4.4 Health, Safety, and Quality Assurance Group (HS&QAG)

The Health, Safety, and Quality Assurance Group (HS&QAG) is responsible for identifying, defining, and ensuring compliance with applicable federal and state health, safety, and radiological control requirements as well as applicable quality assurance requirements. Specific tasks assigned to the HS&QAG are:

- Identifying, defining, and developing strategies for health, safety, radiological, control, and

quality assurance compliance requirements,	conducting plan of the day/plan of the week meetings, occurrence notifications, and	1 2 3
• Conducting independent subproject assessments and compliance verifications, and	• Providing support for development of compliance documentation and subproject closeout	4 5 6 7
• Supporting Project Management and Operations groups to ensure that health, safety, radiological control, and quality assurance compliance is attained and maintained throughout the life of the subproject		8
2.4.5 Operations Management Group (OMG)	2.4.6 Special Projects	9
Operations Management Group is responsible for the implementation, management, and completion of subproject field activities. Specific tasks assigned to the Operations Management Group are	Special Projects is responsible for development of program- and project-level documentation and standards as required for effective, efficient, and compliant D&D activities	10 11 12 13 14 15 16
• Review and approval of project scoping and engineering design documents,	2.5 Other EG&G Organizational Interfaces	17 18 19
• Review, approval, and implementation of pre-operations requirements including readiness reviews, training documentation, contractor evaluation and selection, development of exclusion zones, and	Other interfaces with EG&G organizations will be developed on a project-by-project basis. The other ER-MSA IPPs define required interfaces (i.e., ER Health and Safety, ER Quality Assurance, ER Procurement)	20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
• Field operations management, schedule, cost control, regulatory compliance and reporting, and		37 38 39 40
• Compliance with Conduct of Operations during field operations, including maintaining daily logbook, reviewing and approving log and tagout documentation, ensuring training certification, and		41 42 43 44 45 46

3.0 SUBPROJECT MANAGEMENT PLAN (SMP)

The RFP maintains a Site Utilization Review Board (SURB) made up of DOE and contractor personnel to determine the disposition of RFETS facilities. Either the operations organization or the D&D organization will develop the SURB package in accordance with SURB procedures. Both operations and D&D will approve and present the SURB package to the SURB. If it is determined that a facility is a candidate project (subproject) for D&D then the subproject baseline planning will commence. For D&D subproject activities, the SMP will provide the subproject functional requirements, technical scope, conceptual estimate, and baseline schedule. This includes items found in the engineering study (ES), functional design criteria (FDC) [on the operational requirements Documents (ORDs) at RFETS], and conceptual design report (CDR) under DOE Order 4700 1, and Phases I (Transition), II (Project Preparation), and III (Environmental Review) of the EM-40 Guidance Document. The content and extent of the SMP will vary in accordance with the size, complexity, and type of project. In the event a project consists solely of equipment removal and packaging, the SMP may defer completely to the Integrated Work Control Package (IWCP).

The SMP is initiated after facility transition and should coordinate closely with facility deactivation in order to determine the extent of deactivation and D&D activities. The SMP describes the subproject and establishes subproject baselines against which overall progress of the project and the effectiveness of its management shall be measured. Figure 3-

1 shows the logic flow in developing an SMP

The SMP is intended to establish the technical, cost, and schedule baseline through incorporation of the conceptual technical approach (EDGM Section 1 through Section 5). In addition, this plan establishes and refines the work breakdown structure (WBS), organizational roles and responsibilities, and the overall project work flow logic. Any subproject-specific quality assurance (QA) requirements will be addressed in this plan. Development of this plan will mandate an environmental review process intended to provide early identification of regulatory issues and permitting requirements. These requirements will be incorporated into the subproject scope, schedule, and budget and will ensure that the requirements contained in the Sitewide Environmental Compliance Plan (SECP) are met.

The SMP specifies the overall procedures and guidelines for implementation of the specific D&D subproject. The following elements are to be described in the SMP

- Project Scope Description
 - Building History
 - Project Purpose
 - Management Implementation Plan
 - Design Basis (Assumptions)
 - Performance Objectives,
- Environmental, Safety, and Health
 - Environmental Review
 - Safety and Health Requirements
 - Baseline Characterization
 - Hazards Assessment,

SUBPROJECT MANAGEMENT PLAN

Logic Flow Diagram

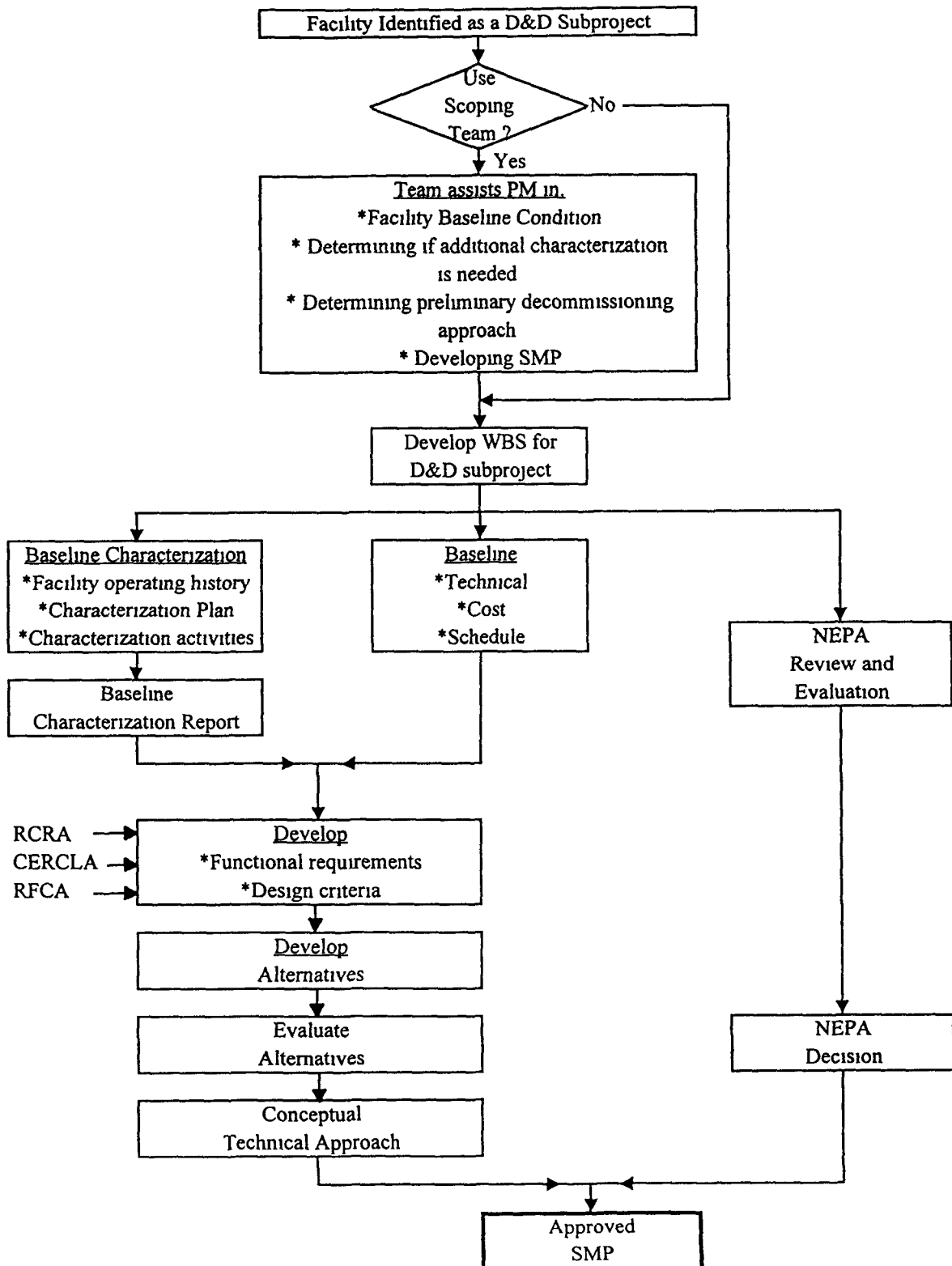


Figure 3-1

- Project Functional Requirements
 - Cleanup Standards
 - Decontamination Methods
 - Dismantlement Methods
 - Design Codes and Standards
 - Alternatives Evaluation, and
- Project Approach
 - Conceptual Approach
 - Conceptual Estimate
 - Conceptual Schedule

The information developed in the D&D SMP will be the basis for the subsequent development of the Decommissioning Subproject Plan

The SMP will include subtier activities that are needed prior to developing the Subproject Decommissioning Plan. These activities may address areas such as sampling and analysis (S&A), environmental checklist D&D documentation, further characterization, (i.e., NEPA) waste management, subproject QA planning, and health and safety reviews for S&A. These subtier activities will be documented within the SMP plans and results will be included as attachments.

3.1 Subproject Scoping Team

The project scope will address the bounds of the specific subproject being undertaken (EDGM ERP-3.2). This description should address the particular equipment, room, building, facility, or process that is undergoing D&D. The final objective (i.e., unrestricted release, restricted release, demolition) of the activities should be included.

For complex subprojects, it is often advantageous to assemble a subproject scoping team (EDGM ERP-2.5) to assist

the PM in documenting the facility baseline condition, determining if additional characterization is needed, and developing a preliminary decommissioning approach. The purpose of convening subproject scoping teams is also to define the basic subproject requirements and objectives, to select the appropriate elements, criteria, and personnel for subsequent design evaluation efforts, and to assign appropriate organizational responsibilities, participation, and review requirements. The subproject scoping team should be structured to the specific subproject, but it normally consists of individuals from the D&D subproject organization, the facility operations organization, safety organizations, and regulatory analysis organizations. To be effective, the subproject scoping team should include no more than six members, with the PM serving as the chairman.

All D&D subprojects of significant size, duration, complexity, and cost warrant a subproject scoping team to plan the initiation of the subproject design activities. For subprojects of short duration, a formal scoping team is not required. The results of the scoping team efforts will be documented in the SMP.

3.2 Subproject Scope Description

This section will include the building history, project purpose, management implementation plan, design basis, and performance objectives.

3.2.1 Building History

To develop the D&D subproject, information regarding the operational history of the facility will be reviewed to assess the nature and extent required of D&D activities. This section includes a

detailed discussion of building operating history as it affects D&D activities. Of particular importance are chemicals and/or products used at the facility. The documentation of normal operations, spills, and accidents at the facility will require the review of occurrence notifications, building operating logs, and other historical records. Interviews with past operations personnel will also be valuable for data collection.

3.2.2 Project Purpose

The SURB will determine if a facility is to be used after D&D or if the facility has no future use. This section will discuss the purpose of the D&D process.

3.2.3 Management Implementation Plan

Included in this section will be the Work Breakdown Structure (WBS), project organization and responsibility description, project controls (see ER-IPP Project Controls), performance measurement system, and quality assurance plan (see ER-IPP Quality Assurance).

3.2.4 Project Assumptions

This section will describe the pertinent assumptions on which the conceptual and definitive design will be based. Assumptions might include which activities will be conducted by facility operations, deactivation, or D&D, as well as contamination levels based on process knowledge.

3.2.5 Performance Objectives

This section will describe the end point of the project at which to measure the completion of the job. This section will

also include intermediate objective for performance measurement during the conduct of the project.

3.3 Environmental, Safety, and Health Requirements

Environmental, safety, and health (ES&H) review and documentation requirements that must be addressed when planning and implementing D&D subprojects must be consistent with the Environmental, Health, and Safety Plan. A brief summary of major ES&H requirements that may impact D&D subprojects is presented along with guidance for compiling documentation needed to support the D&D project phases. Due to many possible permutations for regulatory involvement in specific RFP D&D actions, it is imperative that regulatory requirements be defined early and thoroughly.

3.3.1 Regulatory Requirements

The D&D Project at the RFETS will be governed by three major environmental regulations: NEPA, RCRA, and CERCLA. D&D projects will also be affected by the provisions of the Rocky Flats Cleanup Agreement (RFCA) if the facility is located within the boundaries of an OU or interfaces with remediation of an OU.

This section will describe a detailed discussion of environmental requirements based on the following sections and the results of the completed Environmental Checklist (see Appendix A).

3.3.1.1 NEPA Requirements

NEPA is a review and documentation process promulgated under 10 CFR 1021, and executed pursuant to DOE Order

5440 1E, Chapter V NEPA requires that all federal agencies identify any potential environmental impacts associated with a proposed project that may impact the environment and/or human health NEPA requirements vary based on the scope of the proposed project For D&D subprojects, the NEPA process consists of reviewing the alternatives established and assessing the environmental impacts from each alternative Because most RFETS D&D subprojects will not have significant environmental impact, a Categorical Exclusion (CX) or an Environmental Assessment (EA) with a Finding of No Significant Impact (FONSI) will be required In very infrequent circumstances, an Environmental Impact Statement (EIS) with subsequent Record of Decision (ROD) will be required Depending on the complexity of the D&D activities, the NEPA documentation will be prepared and incorporated into the Decommissioning Subproject Plan, or will be prepared as a stand-alone document

DOE directives (e g , DOE Order 5440 1E) require that NEPA documentation be reviewed and approved by DOE-Headquarters To avoid unnecessary delays, the requirements for NEPA documentation must be identified as soon as possible in the developmental stages of D&D efforts

3 3.1.2 RCRA Requirements

RCRA regulates the generation, transportation, storage, treatment, and disposal of solid and hazardous waste DOE Order 5400 3 discusses management of hazardous and radioactive mixed waste within the DOE complex

Many of the RFETS facilities currently contain equipment that is included in the

RFETS RCRA Part B Permit application or regulated under interim status, and as such must be closed in accordance with a RCRA closure plan The RCRA closure plan must be approved by the Colorado Department of Public Health and Environment (CDPHE) prior to implementing a D&D subproject Therefore, D&D activities must consider lead time for implementing RCRA closure requirements and must integrate these requirements into the planning and engineering of the D&D subproject

Any D&D subprojects that involve closure of RCRA units shall be accomplished in accordance with the State of Colorado Hazardous Waste Regulations (CHWR) Closure of the unit may require the removal and/or decontamination of all waste residues, contaminated structures, equipment, and the associated soil The closure plan identifies RCRA closure requirements, the steps to achieve compliance with the requirements, operations and maintenance, long term monitoring requirements (if required), and security requirements The closure plan will also stipulate any specific design requirements to achieve remediation goals Design requirements can include functional design criteria, performance specifications, and specific requirements associated with the project Once the closure plan is completed, it will be submitted to CDPHE for review and approval Post-closure requirements will only apply if hazardous waste remains after completion of closure activities Post-closure documentation will be completed in compliance with requirements identified in the State of Colorado RCRA regulations

Waste generated as a result of closure activities is to be managed as hazardous waste unless the provisions of Colorado

regulation 6 CCR 1007-3, Section 262 3(d) apply The waste is to be packaged and managed in accordance with 6 CCR 1007-3 and RFETS waste management requirements These requirements include waste characterization in accordance with SW-846 procedures, manifesting the waste for offsite shipment, and disposal Specific requirements for hazardous waste designation are found in 6 CCR 1007-3

3.3.1.3 CERCLA Requirements

CERCLA gives EPA the authority to investigate and respond to a release or threat of release of a hazardous substance into the environment DOE Order 5400 4 establishes DOE policies and procedures for the DOE complex as they relate to CERCLA CERCLA requirements may be applicable at any facility undergoing D&D if there is a release or real threat of a potential release As required by CERCLA, the D&D process will be designed to protect human health, welfare, and the environment

In the event that a specific facility at RFETS is decommissioned under CERCLA, two types of response actions are authorized by CERCLA Removal Actions and Remedial Actions

Removal actions are those activities taken to clean up or remove released hazardous substances from the environment Removal actions may also include activities necessary to respond to the threat of release of hazardous substances into the environment and those tasks associated with monitoring, assessment, and evaluation of the release or threat of release, disposal of the removed materials, and other activities that may be taken to prevent, minimize, or mitigate damage to public health or the environment

Remedial actions involve the long-term study of site conditions, treatability studies, and development of planning and scoping documents DOE has entered into an agreement with CDPHE and the EPA for implementing CERCLA at RFETS The agreement specifies Individual Hazardous Substance Sites (IHSS) for which specific remedial activities are to be conducted This agreement was signed at a point when the plant mission was still in a cold shutdown mode Therefore, D&D was not considered within this agreement

3.3.1.4 RFCA Requirements

The RFCA governs remedial actions associated with 16 OUs at the plant The RFCA was previously referred to as the Interagency Agreement (IAG) The RFCA integrates requirements of both RCRA and CERCLA for various site remedial activities Some facilities that will eventually undergo D&D are located within the boundaries of the OUs, or may interfere with anticipated RFCA-governed remedial activities Several of the facilities that will undergo D&D at the site may require integration of RFCA requirements and schedules with D&D activities and schedules

Remediations governed by the RFCA require project documentation The preferred D&D project documentation for review and approval to the regulators will be the D&D IPP An annual D&D subproject list, including a brief description and milestones, will be forwarded to the regulators for review and approval The D&D process will then be subject to strict compliance with the D&D IPP Informational copies will be forwarded to the regulators, including the SMP, NEPA Determination, and SDP The schedule for submittal of the

documentation is negotiated between the DOE, EPA, and CDPHE. It is important to recognize that facility D&D is currently not included in the language of the RFCA, but may be considered as a part of the RFCA renegotiations. This will most likely be established in the renegotiated RFCA. During this phase of the project, the PM should ensure that integration with the RFCA is completely and thoroughly defined.

3.3.2 S&A Health and Safety Plan

This section will include the S&A-specific health and safety plan (HASP). The HASP will include applicable sections of the ER-IPP for health and safety, and the building-specific HASP. A boiler plate HASP has been attached for S&A HASP development (see Attachment B). DOE Orders 5483.1A, 5480.10, and 10 CFR 835 (DOE Order 5480.11) establish standards for implementation of an occupational safety program for the DOE complex. The primary safety and health standards applicable to D&D subprojects are those found in OSHA 29 CFR 1910 and 1926. Radiation protection standards for occupational workers can be found in 10 CFR 835 and DOE Order 5480.11 and DOE Order 5480.6 Radiological Control Manual. The DOE Order establishes standards and program requirements for DOE facilities.

The S&A HASP will identify field work tasks to be performed, describe the hazards (i.e., physical, chemical, and radiological) associated with these tasks, and specify the frequency and type of air and personnel monitoring to be conducted during work activities. Personal protective equipment, as appropriate, is to be used by workers for each task. Training and medical monitoring/surveillance

requirements, site control measures, decontamination procedures, and contingency plans for emergencies (e.g., medical, spill, fire, and explosion) will be identified.

3.3.3 Baseline Characterization

The Baseline Characterization effort consists of preparation of the Baseline Characterization Plan, implementation of the plan, and preparation of the Baseline Characterization Report.

3.3.3.1 Baseline Characterization Plan

Once the data requirements have been identified, a Baseline Characterization Plan can be developed to obtain the missing information to support the engineering and implementation of the D&D subproject. The characterization plan will include establishment of data quality objectives (DQOs) to ensure that the information obtained will be of a quality to meet subproject requirements. The BCP defines the following:

- Types of samples or measurements required,
- Required instrument sensitivities,
- Sample sizes,
- Number of samples/measurements,
- Sample/measurement locations,
- Data reduction, validation, and reporting, and
- QA requirements

DQOs are qualitative and quantitative statements that specify the quality of the data required to support decisions during D&D activities. They are determined based on the end uses of the data to be collected. In addition to characterization, sufficient data may be needed to evaluate remedial alternatives, determine design criteria, or monitor site conditions and/or remedial action effectiveness. The level of detail and data quality needed will vary based on the intended use of the data.

A Field Sampling Plan and Quality Assurance Subproject Plan, which defines the sample locations and the sample collection and analytical procedures, will be included as a component of the Baseline Characterization Plan. To ensure proper protection of the field characterization team, existing health and safety procedures and plans will be reviewed and amended as needed to address any specific hazards associated with implementation of the Baseline Characterization Plan.

To ensure that the characterization data are processed in a manner that meets the objectives of ERM, the Baseline Characterization Plan will be verified for consistency with the ER Data Management Plan.

3.3 3.2 Facility Characterization

Following approval of the Baseline Characterization Plan and the S&A HASP, facility characterization activities will be initiated. These activities include sample collection, laboratory analyses, data validation and data management. The characterization results will be used to select the appropriate decontamination methods, to classify the waste materials into the correct management categories, and to determine the extent of

decontamination required to achieve subproject cleanup goals

From a scheduling perspective, it is preferable to initiate facility characterization as early as possible in the project. Delays in characterization could create detrimental effects on the project critical path planning and scheduling. Evaluation of analytical results will be factored into the development of the D&D engineering and implementation plans.

3.3.3.3 Baseline Characterization Report

Results of the characterization effort are summarized in the Baseline Characterization Report. The report presents, in summary format, the methods used to characterize the facility, deviations from the Baseline Characterization Plan, and the results of the sampling and analysis. A summary of QA sampling and analysis should also be presented. Detailed analytical data should be appended to the report.

The Baseline Characterization Report should be prepared in sufficient detail so that waste volumes and waste types anticipated during D&D operations can be easily defined during conceptual engineering, and definitive design. Areas of the facility that are expected to be either highly contaminated or uncontaminated, based on a review of the operating history, should be highlighted in the report.

3.3.4 Preliminary Hazards Assessment

DOE Orders 5480 23, 5480 21, and 5480 22 require preparation and review of safety analyses for DOE operations. This section is limited to the initial evaluation of existing safety analysis and a

preliminary characterization of the hazards DOE-STD-1027-92 provides preliminary guidance for accident analysis The detailed safety analysis will be conducted during the subproject decommissioning planning stage

3.4 Project Functional Requirements

Functional requirements, design criteria, and objectives that must be achieved are documented in the SMP The functional requirements and design criteria (see DOE Order 4700 1 and the EDGM) are used to develop the conceptual technical approach and the Subproject Decommissioning Plan (SDP) (further described in Section 4 0) Development of these criteria is consistent with the ER Design Management Plan Several key topics comprise the D&D subproject-specific criteria and include (but are not limited to)

- Cleanup standards,
- Functional requirements for decontamination methodologies to achieve cleanup standards,
- RFETS standards and procedures applicable to D&D subprojects,
- National consensus codes and standards applicable to D&D subprojects,
- DOE Orders applicable to the D&D subproject, and
- Environmental regulations applicable to the D&D subproject

Thorough and definitive functional requirements and design criteria are key elements of the project definition phase of the D&D subproject During definition of

the requirements, a balance must be maintained between defining detailed and specific subproject requirements and allowing sufficient latitude to the design team for innovative and creative engineering

Functional requirements and design criteria should be reviewed by the PM and the design team early in the engineering and planning phase Many of the criteria defined will have significant impacts on the engineering alternatives and design of the subproject

3.4.1 Cleanup Standards

Cleanup standards should be based on the contaminant list resulting from a knowledge of the facility operating history and the baseline characterization activities Defining cleanup standards is difficult and can be a time-consuming process for both relatively simple and complex D&D subprojects DOE, regulatory, and health and safety requirements must be reviewed during definition of cleanup standards Other considerations include review of previously established standards at RFETS, DOE sites, or other nuclear facilities A review of other standards will provide valuable information about methods and procedures used in establishing previously approved standards

DOE Order 5400 5, Radiation Protection of the Public and Environment, contains radiological standards and protection requirements covering operations by DOE and DOE contractors Chapter IV of this Order gives requirements and guidelines for cleanup of residual radioactive material, management of the resulting wastes and residues, and requirements for release of the property These requirements and guidelines are based on

40 CFR 192, Nuclear Regulatory Commission (NRC) Regulatory Guide 1.86, and subsequent NRC guidance on residual radioactive material

Once draft cleanup standards have been established, appropriate decontamination methods should be investigated. These methods will consider constraints at each facility, as they apply to the subproject. A wide variety of decontamination methods have been demonstrated at nuclear facilities and at environmental restoration sites. In most instances, a single decontamination method will not be capable of reaching cleanup standards; a combination of several methods will be required. Aspects of decontamination methods to be considered should include appropriateness to the contaminants at the facility, ability to achieve cleanup standards, ability to reduce worker exposures if cleanup standards cannot be achieved, secondary waste generation and waste minimization, ability to treat and dispose of the secondary waste on site, generation of new regulated waste, and other facility-specific constraints such as criticality control. Functional requirements and design criteria for the decontamination process should be based on the recommended decontamination methods.

3.4.2 Decontamination Methods

This section will describe the decontamination methodology based on the contaminants and the cleanup standards.

3.4.3 Dismantlement Methods

This section will describe the dismantlement methodology based on the contaminants and the cleanup standards.

3.4.4 Design Codes and Standards

This section will include a detailed list of applicable codes and standards (see DOE Order 4700.1, ERDM).

3.4.5 Alternatives Development and Evaluation

For most facilities, there are several D&D alternatives that will achieve the facility cleanup standards or release criteria. Regulatory, waste management, technological, engineering, and cost and schedule options may require extensive evaluation prior to detailed definition of the work scope. An alternatives evaluation should address the range of realistic alternatives for each facility. The PM is responsible for determining whether an alternatives evaluation is warranted, based on the D&D complexity and contaminants present at each facility. Each alternative should be evaluated in sufficient detail to allow an objective determination of the best course of action for each subproject. In cases where the facility alternatives are limited, as in small facilities or facilities with relatively low levels of contamination, the number of alternatives evaluated should be minimized. For large complex facilities with high levels of contamination, the alternatives evaluated should be commensurate with the complexity of the D&D operation anticipated. Following selection of an alternative, development of the conceptual technical approach proceeds. The alternatives evaluation is documented in the SMP.

3.4.5.1 Alternatives Development

A range of alternatives that consider facility reuse, recycling, and demolition

should be assembled. At the PM's discretion, the *No Action Alternative* may be evaluated. The alternatives should vary in their assessment of several topics, including decontamination versus disposal as-is, decontamination for dose reduction during dismantlement versus remotely operated dismantlement, decontamination methods appropriate to the contaminants present, special constraints such as space limitations and utilities available, and ability to meet cleanup standards. Other items that should be considered in the development of alternatives include secondary waste generation and its treatment, storage and disposal, cost/benefits, schedule for startup and operation, special health and safety concerns such as criticality, special nuclear material (SNM) handling, worker exposure, exposure to the public, and environmental protection during operations.

Each alternative should be developed in sufficient detail to allow objective evaluation and ranking against several evaluation criteria. Order-of-magnitude costs and schedules should be developed for comparison of the alternatives. When developing costs for each alternative, a common basis should be used and all costs, including surveillance and maintenance, engineering, capital equipment, waste treatment, storage, and disposal, secondary waste management, decontamination, and dismantlement operations should be included in the cost estimates.

During alternative development, it may become apparent that technology development is needed before alternatives can be implemented. For example, it may be necessary to develop a remotely operated device before dose reduction

activities can be implemented for the alternative investigated. Therefore, it will be necessary to incorporate technology development activities into the D&D planning process for the facility. Technology development activities can be time consuming and may impact D&D schedules if not introduced early in the planning process. Early identification of technology development activities is essential for timely completion of many D&D subprojects.

3.4.5.2 Alternative Evaluation

Following development, the alternatives are evaluated against several criteria to determine the best alternative. However, for larger projects, it is often more difficult to evaluate the alternatives. In this case, the alternatives are first screened and then evaluated in detail against predetermined evaluation criteria. For screening the alternatives, a go/no go analysis should be used. For example, if it is determined that an alternative cannot meet the cleanup standards, it is not considered further. After screening the alternatives, a weighted criteria evaluation should be used. When using the weighted criteria method, each criterion is given a subjective weighing factor based on its relative importance and significance in being achieved by the alternative. Each of the alternatives is then ranked according to how well it meets the criteria. The criteria weighing factor is then multiplied by the ranking score for all of the criteria, the results from the successive multiplications are added, and the total score is assigned to the alternative. The alternative with the highest score is the preferred alternative.

Evaluation criteria are developed on a case-by-case basis. However, the evaluation criteria should consist of the

following at a minimum and may be used as go/no go criteria for larger subprojects

Ability to Meet Cleanup Standards -

Alternatives should achieve cleanup standards. Alternatives that meet cleanup standards will vary in their ability to achieve the standards. For example, an alternative may meet cleanup standards but may take three times as long and cost twice as much as another alternative. The alternative that most easily achieves the standards should be given the highest ranking compared to other alternatives.

Ease of Implementation -

Some alternatives may be rapidly implemented and easily conducted with little chance of complications, while others may require extensive preparation and may be more complex. If the end result is the same, the easiest to implement alternative is preferred.

Health and Safety - Some alternatives may have a higher possibility for worker exposure and safety issues. The safest alternative should receive the highest ranking.

Other criteria for evaluation of alternatives should include cost, secondary waste management, schedule for start, and schedule for completion.

3.5 Conceptual Technical Approach

After selection of the preferred alternative, development of the conceptual technical approach of the D&D subproject commences. The selected alternative description should be expanded in sufficient detail to allow preparation of a baseline cost estimate and schedule with a high level of confidence.

3.5.1 Conceptual Approach

The conceptual approach is incorporated into the SMP. Detailed sketches showing appropriate sequences of the D&D should also be prepared. In addition, the following information should be included in the SMP:

- Facility equipment inventory,
- Characterization maps and tables for surfaces,
- Characterization information for equipment,
- Description of project sequence, including decontamination methods used during each phase,
- Preliminary Waste Management Plan,
- Preliminary Hazard Mitigation Plan,
- Identification of special circumstances such as space limitations, use of remotely operated equipment, and special contamination control procedures and equipment that will affect the design and D&D operations,
- Outline specifications,
- Preliminary procurement plan, and
- Identification of long-lead procurement items.

As the development of the D&D concept proceeds, the functional requirements and design criteria are reviewed and modified as appropriate to reflect the selected

approach The technical approach will be internally reviewed by the EG&G project team before transmittal in the SMP to DOE-RFETS/ERD. Once the SMP is approved by DOE-RFETS/ERD, Detailed Design (analogous to Title II Design per DOE 4700 1) is initiated. Preliminary Design (analogous to Title I Design) is not required for D&D activities. Because the design will proceed directly into Detailed Design, the conceptual technical approach must be prepared in sufficient detail to prevent unknowns from affecting the Detailed Design.

3.5.2 Technical, Cost, and Schedule Baseline

The second element in this phase of the D&D subproject includes development of the subproject technical, cost, and schedule am. Development of the subproject am is typically initiated after receipt of preliminary characterization data. Subproject baseline development includes preparation of functional requirements and design criteria (EDGM ERP-4 1), alternatives evaluation and selection of the D&D alternative (EDGM ERP-4 2), technology development activities, conceptual technical approach (EDGM ERP-5 9), and preparation of the SMP. These baselines are developed consistent with the guidelines presented in the Configuration Management Plan.

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4.0 DECOMMISSIONING PLAN

will be required

For each D&D subproject, a Subproject Decommissioning Plan (SDP) will be prepared that describes the work scope in significant detail. This plan will constitute Title II, Detailed Engineering, for the subproject. The following elements are included in the SDP:

- Engineering Plan
 - Engineering Design
 - Definitive Schedule
 - Definitive Estimate
 - Contingency Plan
- Waste Management Plan
 - Waste Management Evaluation
 - Waste Management Plan
- Safety Documentation
 - Safety Analysis
 - Project Health and Safety Plan
- Operations Procedures

Figure 4-1 shows the logic flow in developing an SDP.

4.1 Engineering Plan

The work elements associated with D&D engineering and implementation planning include:

- Engineering Design -- Engineering design includes plans and specifications for facility dismantlement, facility-specific support systems or equipment, and engineered designs for unique technology applications
- Cost Estimates -- Definitive cost estimates for all D&D operations

- Schedule -- Performance scheduling (including milestones, reviews, and critical path elements as appropriate) of the primary activities and processes of the project will be developed

4.1.1 Engineering Design

Following approval of the conceptual technical approach (C), the Detailed Design (EDGM Section 8) is initiated. The Detailed Design further refines the conceptual technical approach. The plans, specifications, procurement plan, waste management plan, mitigation plan, and description of the subproject sequencing are finalized. Anticipated radiological and chemical contaminant conditions should be defined in detail.

During Detailed Design, preparation of draft D&D procedures is initiated. If special methods or equipment are to be used, coordination with vendors in developing or modifying procedures is essential. The Detailed Design package must include a sampling and analysis plan for measuring the success of decontamination. The completed Detailed Design package is incorporated into the SDP.

The content of the Detailed Design will vary depending on the complexity of the subproject and the procurement approach to accomplishing the work. The PM must establish early in the Detailed Design those activities that will be subcontracted and those activities that will be completed by EG&G or the onsite construction contractor. For example, the PM may

SUBPROJECT DECOMMISSIONING PLAN

Logic Flow Diagram

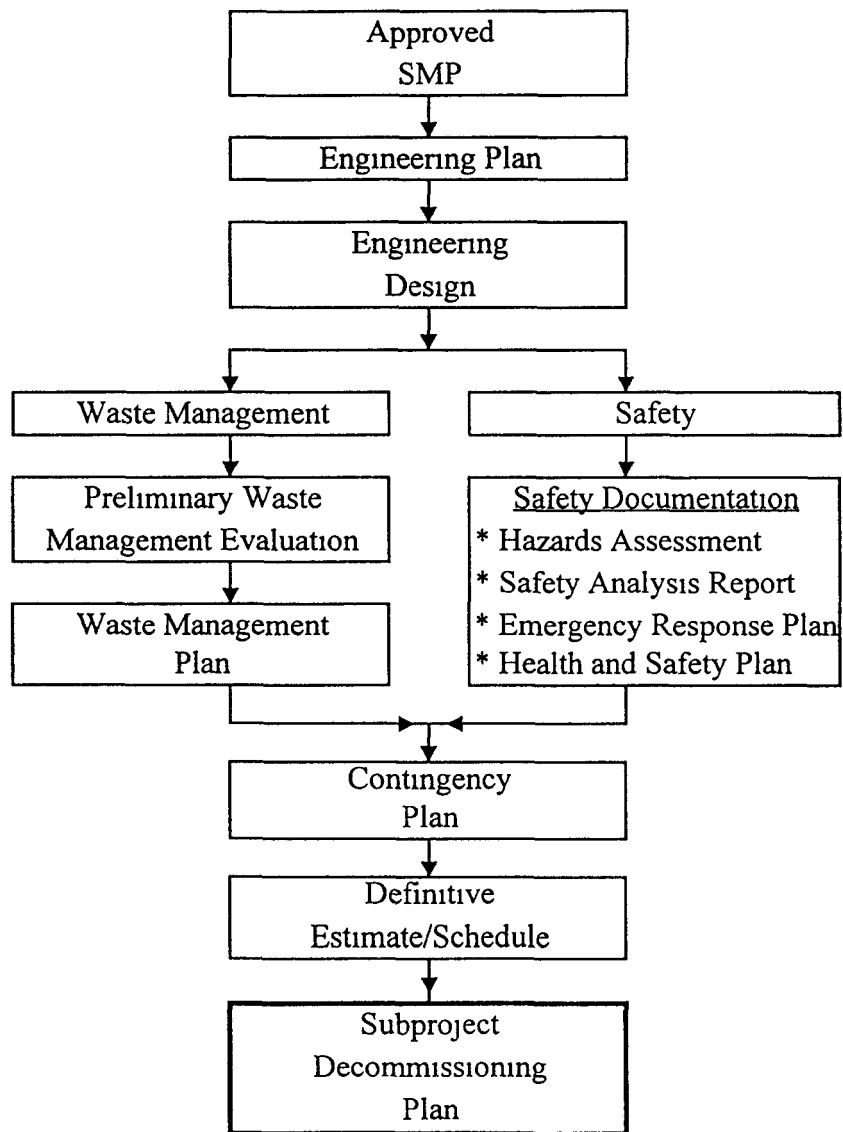


Figure 4-1

elect to use performance specifications instead of detailed construction specifications for a subproject that consists primarily of decontamination by a readily available technology

4.1.2 Cost Estimate/Schedule

During Detailed Design, the subproject definitive cost estimate and baseline schedule are prepared (EDGM ERP-8 4) The definitive cost estimate and schedule include the following activities as appropriate

- Improvements to land, depletable resources, land rights, and turnover costs to land users,
- Engineering during operations,
- Construction (i.e., demolition) and all other structures to support the D&D activities,
- D&D operations including waste handling, packaging, transport, and disposal, secondary waste treatment, packaging, storage, and disposal, decontamination system operations, dismantlement, contamination containment and control, temporary utility systems, and safety systems such as fire prevention (S&M is not included in the D&D subproject estimate),
- Safeguards and security,
- Project and construction management,
- Equipment,
- Direct and indirect construction costs,

- Computer systems (if dedicated to the project),
- Standard and special facilities,
- Contingency, and
- Economic escalation

The Detailed Design cost estimate basis will include the project schedule, engineering data, methods of performance, as well as final exact detailed requirements, and must include a complete list of all data used in developing the estimate. Several estimating techniques can be applied to D&D subprojects, as described in DOE Order 4700 1, including the bottom-up technique (material take-offs), specific analogy technique, parametric technique, cost review and update technique, and expert opinion technique. For each detailed estimate, a combination of these estimating techniques will likely be required. It is difficult to establish firm costs for decontamination because decontamination is often an iterative process in which attempts at decontamination continue until the item or structure is "clean." The estimator must rely on expert opinion and prior successful decontamination projects to establish these costs.

4.1.3 Contingency Plans

Because of the unknowns associated with D&D activities, a detailed contingency analysis is required to develop the project contingency funds. The contingency analysis should consider the potential for success of decontamination techniques, potential for changing waste treatment or disposal costs, potential for successful application of newly developed or innovative technologies, and general detail.

of plans, specifications, engineering data, and assumptions used in their development. Contingency associated with D&D activities should range from 10 to 25 percent of the total cost.

4.2 Waste Management

A thorough evaluation of the waste management issues associated with D&D activities is necessary to ensure that the D&D subproject is cost-effective and in regulatory compliance. The Waste Management Plan (WMP) section (EDGM ERP-8.5) forecasts the amounts and types of wastes generated during D&D activities, and defines how the wastes will be handled, stored, transported, and disposed of in accordance with DOE, federal, and state requirements. The waste management strategy is initiated during definition of the technical approach, and is finalized during preparation of the Detailed Design.

In developing the waste management strategy, two subtier sections will be prepared to allow proper analysis of alternatives and design: the Preliminary Waste Management Evaluation and the WMP section as described below.

4.2.1 Preliminary Waste Management Evaluation

The Preliminary Waste Management Evaluation identifies the waste management basis on which the alternatives evaluation and the technical approach are developed. To develop the evaluation, the Building/Facility Site Evaluation and Process Historical Document is reviewed to establish potential waste volumes and types that may be generated during D&D activities. Waste types could potentially include Low

Level Waste (LLW), Low Level Mixed Waste (LLMW), Transuranic Waste (TRU), TRU-Mixed waste, hazardous waste, polychlorinated biphenyls (PCBs), and asbestos. These wastes may be present as solids, liquids, and gases, or as airborne wastes. This Preliminary Waste Management Evaluation envelopes the waste types and potential volumes that could be generated. The evaluation will assist the D&D engineering staff in determining applicable treatment, storage, and disposal alternatives during the D&D alternatives evaluation and conceptual design. The preliminary waste management evaluation also will include a detailed assessment of the regulatory requirements governing each waste stream, and will identify appropriate treatment, packaging, storage, transportation, and disposal requirements for each stream.

Requirements for the management of radioactive wastes are defined by DOE Order 5820.2A. Hazardous wastes are regulated under the requirements of RCRA (40 CFR 260 through 40 CFR 268). Asbestos and PCBs are regulated under the requirements of the Toxic Substances Control Act (TSCA). CERCLA may also apply to some facilities. Airborne emissions of organics, asbestos, and radionuclides are regulated under National Emission Standards for Hazardous Air Pollutants (NESHAP). Airborne discharges of radionuclides are also governed by DOE Order 5400.5. Other regulations, such as the Clean Water Act, National Pollution Discharge Elimination System (NPDES), and the Clean Air Act (CAA) may also apply to D&D operations.

D&D activities can generate large volumes of wastes that could be recycled, treated, or otherwise minimized in toxicity, mobility, or volume. The Preliminary

Waste Management Evaluation should identify opportunities for waste minimization. Waste minimization activities will result in reduced overall subproject life cycle costs. When evaluating waste minimization for individual subprojects, opportunities to combine waste minimization opportunities from several subprojects should be investigated to improve overall efficiency.

4.2.2 Waste Management Plan (WMP)

The WMP section finalizes the strategy developed by the Preliminary Waste Management Evaluation. Specific details regarding waste volumes, secondary waste generation, waste treatment, storage and disposal, waste characterization, waste packaging, and regulatory requirements are defined in the WMP.

If waste to be packaged and shipped offsite for treatment or disposal is identified in the WMP section, waste handling, segregation, packaging, and shipping requirements will be identified for incorporation into subproject procedures. Incorporation may be accomplished by referencing existing site procedures.

Wastes generated during D&D activities must be characterized before they are either packaged for storage (or disposal) or before they are treated. Process knowledge can be used to determine if the wastes are regulated under RCRA. If process knowledge is not available or is inadequate, sampling and analysis will be necessary. Sampling and analysis will also be required if waste is shipped offsite for disposal to verify compliance with the waste acceptance criteria. A detailed waste sampling and analysis plan (SAP) will be included in the WMP section. Waste minimization and pollution

prevention practices will be emphasized during D&D operations to reduce the type and quantity of waste generated.

D&D waste will be managed, when feasible, to segregate the non-contaminated from the contaminated debris/waste materials. The non-contaminated debris/waste material will be packaged for reuse, offsite recycle, or disposal at a sanitary landfill. The contaminated debris/waste material will be segregated to separate potentially hazardous wastes, low level radioactive wastes, and mixed wastes. Two types of wastes are anticipated to be generated during the D&D operations: 1) operational and 2) decommissioning wastes.

4.2.2.1 Operational Wastes

The anticipated operational wastes include personal protective equipment, (PPE) decontamination fluids, and other liquids. Waste from PPE is expected to be generated as a result of D&D activities. PPE will be packaged as appropriate for storage/disposal or laundered onsite. However, if PPE is determined to be contaminated with currently untreatable hazardous waste, the PPE will be drummed and placed in onsite RCRA storage awaiting development of treatment technologies or storage capacity.

Wastewaters generated during decontamination activities that are compatible with RFETS waste treatment facilities will be treated onsite. Solid radioactive decontamination wastes and sampling wastes will be drummed and compacted for offsite radioactive or mixed waste disposal, or stored onsite if mixed waste disposal is not yet available.

4.2.2.2 Decommissioning Wastes

The anticipated decommissioning wastes include sediments and sludges from process equipment, demolition debris, and miscellaneous waste streams. Sound waste minimization practices should be followed during generation of any D&D waste.

Residues removed from process equipment will be in pumpable or non-pumpable forms. Pumpable sediments and sludges will be mechanically transferred to water-tight containers for transport to appropriate storage. Non-pumpable sediments and sludges will be manually placed into drums. Absorbent will be added to the drums to ensure that any free liquids are solidified. The drums will be stored at the appropriate onsite or offsite storage facility.

Demolition debris includes structural steel and siding, process equipment, ancillary piping, and non-ferrous debris (i.e., wiring, insulation). Where feasible, the non-contaminated waste will be segregated from the contaminated waste. Non-contaminated will be packaged for reuse, offsite recycle, or disposal at a sanitary landfill. Contaminated waste will be decontaminated as required for handling, and where appropriate will be further segregated and treated for reuse and/or recycle. Primary considerations for treatment include minimization of worker and environmental exposure, waste minimization, natural resource conservation, and waste acceptance criteria at a Treatment, Storage, and Disposal (TSD) facility. The choice of treatment will be balanced between the potential effectiveness and waste acceptance criteria versus the cost and secondary waste generated. In order to choose the most appropriate option, consideration will be

given to characterization of the contamination, the tenacity of the contaminant adherence, chemical structure of the contaminants, final disposition of decontaminated equipment, generation of secondary wastes, treatment systems available, and waste acceptance criteria of targeted TSD facilities.

Equipment and tools used in the demolition, size reduction, and treatment activities may become waste due to equipment failure or residual contamination. Currently undefined waste streams may also be encountered during decommissioning operations. All debris/waste materials will be properly designated and packaged prior to exiting the working or controlled area.

4.3 Safety Documentation

The level of safety documentation (EDGM ERP-8.5) required depends on several factors, including potential offsite impacts from a release of radioactive material during operations, potential worker exposure, and the risks associated with the D&D activities. Safety documentation for D&D activities at RFETS may include preparation of documentation such as a Hazards Assessment Document/Report, a Safety Analysis/Assessment, Preliminary and Final Safety Analysis Reports (PSAR and FSAR), or other similar documentation. An Emergency Response Plan/Contingency Plan will be required as part of the SDP. The Emergency Response Plan outlines the actions to be taken in the event of an emergency including immediate actions to be taken, notification requirements, and subsequent procedures to be followed. Each person working on the project should be familiar with the content of the plan.

4.3.1 Safety Analysis

DOE Orders 5480 23, 5480 21, and 5480 22 require preparation and review of safety analyses for DOE operations. The objectives of the safety analysis preparation and review process assure that

- Potential hazards are systematically identified,
- Potential consequences are analyzed,
- Reasonable measures to eliminate, control, or mitigate the hazards have been taken, including (where applicable) compliance with environmental assessments and impact statements, and
- Documented management authorization of the DOE operation exists based upon an objective assessment of the safety analysis

The safety analysis documentation identifies hazards, assesses risks, and documents the approval for various stages of facility design, construction, and operation. DOE has directed that a graded approach is to be used in the preparation of safety analysis documentation. The objective of the graded approach is to proportion safety requirements for analysis, evaluation, and documentation of the potential hazards associated with operating DOE nuclear and non-nuclear facilities.

With respect to D&D subprojects, the graded approach should be followed to determine the level of effort and documentation that will be associated with D&D activities. Each D&D subproject should be reviewed early in the project

definition phase to determine the hazard classification and the degree to which safety documentation is required. For activities that are relatively nonhazardous, the scope of safety documentation required may be a review of the hazards that were addressed which must be completed prior to initiation of the activity/subproject. Rocky Flats facilities have existing Safety Analysis Reports (SARs) that must be reviewed prior to establishing safety documentation for D&D subprojects. D&D activities may be bounded within the scope of the SAR or an addendum to an existing SAR may be required. The safety documentation for the subproject may be phased (submitted at different decision points in the subproject) and could consist of a preliminary Hazards Analysis, a final Hazards Analysis, Preliminary Safety Analysis Document or Report (PSAD/PSAR), and Final Safety Analysis Document or Report (FSAD/FSAR).

4.3.2 Health and Safety Plan

Based upon Section 4(b)(1) of the Occupational Safety and Health Act (OSHA) of 1970, DOE exercises statutory authority to prescribe and enforce safety and health standards at DOE facilities. Because of the diversity of past missions within the DOE complex, both radiological and non-radiological hazards must be managed when completing D&D subprojects. These programs have been segregated, however, in the future they may be integrated.

DOE Orders 5483 1A, 5480 10, and 10 CFR 835 (DOE Order 5480 11) establish standards for implementation of an occupational safety program for the DOE complex. The primary safety and health

standards applicable to D&D subprojects are those found in OSHA 29 CFR 1910. These general industrial standards include requirements for occupational workers performing remediation activities. Radiation protection standards for occupational workers can be found in 10 CFR 835 and DOE Order 5480.11. DOE Orders establish standards and program requirements for DOE facilities. All D&D subprojects must be conducted in accordance with these standards. For those D&D subprojects that may be involved in hazardous waste operations, OSHA requires that a safety and health program be written for employees involved in hazardous waste operations.

RFETS D&D will be conducted in accordance with the provisions of the approved RFETS Comprehensive Environmental Occupational Safety and Health Program. A subproject-specific health and safety plan, which will be used by personnel who conduct the D&D subproject, will be prepared as required. This plan will additionally address any precautions or concerns associated with criticality or specific hazardous chemicals. It will be maintained for the duration of the D&D subproject.

The D&D subproject-specific health and safety plan will identify field work tasks to be performed, describe the hazards (i.e., physical, chemical, and radiological) associated with these tasks, and will specify the frequency and type of air and personnel monitoring to be conducted during work activities. PPE, as appropriate, is to be used by workers for each task. Training and medical monitoring/surveillance requirements, site control measures, decontamination procedures, and contingency plans for emergencies (e.g., medical, spill, fire, and

explosion) will also be addressed.

4.4 Operations Procedures

This section will include all operations procedures required for project implementation.

Each facility D&D is unique in that contaminants and contaminant levels vary, facility limitations and access vary, and each facility presents unique concerns such as dose control, criticality control, contaminant containment, and safeguards and security. Subproject procedures will be prepared for each facility that address both general operations and unique features of a facility.

During development of procedures for D&D subprojects, the preparer should review RFETS standards, DOE Orders, environmental regulations, and other guidance that may be applicable to the D&D operations. Before procedures are prepared, the procurement strategy should be determined. It must also be ascertained who will be conducting specific portions of the D&D operations. EG&G may request subcontractors to develop their own operating procedures in conjunction with applicable RFETS standards and procedures.

A list of potentially applicable procedures that may be developed for D&D subprojects is provided below. The PM (or his delegated representative) is responsible for developing and maintaining subproject procedures.

- Residual waste removal,
- Stored waste container removal,
- Implementation of decontamination

techniques,	1
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• Decontamination verification,	3
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• Dismantlement and size reduction,	5
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• Waste sampling and analysis,	7
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• Radiological controls,	9
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• Waste packaging and transportation,	11
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• Verification sampling and analysis, and	14
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• Emergency response and notification	17
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5.0 PRE-OPERATIONS ACTIVITIES

Pre-operations activities are those activities that must be completed after the engineering efforts are substantially complete and before actual decommissioning activities start

The SDP provides the definitive design, baseline schedule, cost for completing the D&D subproject, and is the primary document for performing the D&D. Therefore, the SDP must be reviewed thoroughly and be approved by EG&G ER and D&D, and DOE-RFETS/ERD. If the SDP incorporates regulatory requirements, such as RCRA closure or post-closure monitoring requirements, regulatory agencies will review and approve applicable portions of the plan. Before implementing the plan, all review comments and issues must be resolved appropriately. Comments and dispositions, as well as draft and final SDP documentation, must be maintained as part of the project file according to EG&G quality assurance procedures.

5.1 Readiness Reviews

The ER Readiness Review (RR) process will be applied on a graded approach in accordance with the ERM guidelines. Determination of operational readiness must establish that appropriate measures and planning are in place so that activities within the work plan, in conjunction with worker training, will function as they were designed.

Prior to commencing D&D operations, an RR is conducted to ensure that D&D activities have been properly planned and designed. The RR is a systematic review of plans, procedures, and programs

intended to ensure that activities will be conducted in a safe, technically sound, and environmentally protective manner. The first step in the RR process is preparation of the Readiness Review Plan (RRP). The RRP outlines requirements that the planned activities must meet, establishes the Readiness Review Board and its responsibilities, and establishes the readiness review procedures to be followed. The depth and thoroughness of the review established in the RRP should be consistent with the scope of the subproject undergoing review. For simple subprojects, a less detailed review will be required than the review for a large complex program. The RR should be in compliance with EG&G's ER-specific procedure for RRs.

General topics addressed by the RR include adequacy of the technical aspects of the D&D subproject (including a review of the SDP), adequacy and completeness of procedures, training completeness, management and organizational review, adequacy of the Health and Safety Plan and emergency response procedures, and overall readiness of operations personnel.

5.2 Training

EG&G and subcontractor personnel must be trained in the conduct of D&D operations. This training consists of RFETS General Employee Training (GET), safety training such as radiation worker training, OSHA hazardous site worker training, respirator training, D&D operations training, subproject-specific procedure training, and other training identified in the Training Plan and DOE Order 5480.20.

The PM or designated representative is responsible for developing the Training

Plan and for arranging, coordinating, and participating in the training of EG&G personnel and subcontractors as directed in the Training Plan. Training will be based on RFETS-specific requirements as well as those requirements generated from D&D operating procedures. D&D operating procedures should be prepared in conjunction with the Detailed Design and in advance of the training program implementation.

The Training Plan will outline the objectives of the training program, and will define specific requirements for workers involved in the D&D subproject. The Training Plan will include lesson plans as appropriate for the training course. The Training Plan will include D&D subproject-specific training requirements for decontamination operations, waste management operations, sampling and analysis procedures, and other procedures as described in the operating procedures and manuals.

The PM or designated representative will maintain complete training records in compliance with the Training Plan. Subcontractors will be responsible for maintaining their personnel training records and ensuring compliance with the training requirements.

The aim of training is to bring about

- An understanding of the process,
- An understanding of the tools and procedures used in the process, and
- An understanding of the variability of tools and processes that may arise in actual field practice.

Hazardous materials compliance training is

to be provided (per the requirements of 29 CFR 1910.120) for persons responsible for hazardous materials packing and transportation operations. The PM must provide training for radioactive materials handling. Site personnel involved in packaging, loading, and handling of hazardous wastes are to have completed RCRA Hazardous Waste Operations Training.

The PM should ensure that each worker has received the appropriate health physics training for working in radiation areas. Radiological/nuclear safety and control directives may be derived from DOE/EV-0263T, DOE Order 5400.5, and DOE Order 5480.11. Radiological safety training should include specific training to support the concept of As Low As Reasonably Achievable (ALARA) as specified in DOE/EV/1830-TS.

5.3 Contracting and Acquisition

Following completion of engineering and implementation planning, procurement of the items and services identified for D&D activities will be conducted. Long-lead procurement items will be identified in the engineering implementation and planning phase. Procurement plans will be prepared, and detailed cost and schedule information and items associated with D&D operations will be addressed. DOE subcontractors will be identified, retained, and trained (based on the training plan in 5.2).

Contractual issues related to EG&G subcontracting and procurement are managed through the EG&G Procurement Department (see ER-IPP Acquisition Strategy). Each subcontract is assigned a Subcontract Administrator (SA) who is responsible for administration of the

subcontract and for ensuring that EG&G and DOE procurement policies and procedures are adhered to. Technical and related issues are managed by the Contract Technical Representative (CTR). The PM will assign the CTR as appropriate. The CTR is responsible for 1) ensuring that technical aspects of the subcontract are adhered to, 2) subproject reporting and tracking, and 3) interfacing with the subcontractors.

Procurement activities for D&D operations will normally be initiated following completion of the SDP and the RR. However, it may sometimes be necessary to initiate procurement of long-lead items early in order to meet schedule constraints. Long-lead procurement items are identified during the conceptual design. The schedule for procurement is baselined at completion of the conceptual design report. The PM or CTR should integrate long-lead procurement planning with the EG&G Procurement Division as soon as items are identified.

Initial planning for procurement is initiated during preparation of the SMP and is typically formalized during Detailed Design. This preliminary planning should include a procurement strategy that identifies activities to be conducted by EG&G staff, activities to be conducted by outside sources, potential opportunities for small and small disadvantaged businesses, and identification of long-lead procurement items. The preliminary procurement plan should be in sufficient detail to support the development of the conceptual design report cost estimate.

If subcontracted services are required to support development of the SDP, a separate procurement plan should be prepared to address the requirements for

technical services. Options for procuring technical support during the engineering and planning phase of the project include use of existing EG&G subcontracts, competitive bids, and sole-source procurement. The PM should work with the EG&G Procurement Department to define the requirements for procuring technical services.

The final procurement plan will identify all procurement actions necessary to support D&D activities. The plan should identify general scopes of work for subcontractors, establish the types of procurement activities for the scopes of work (unrestricted bid, sole-source procurement, small business set-asides, evaluation criteria, and pre-qualification requirements), selection of pre-qualified bidders, procurement schedules for each bid package, and other information that may be pertinent to the procurement process such as vendor lists for equipment procurement.

The work to be procured should be segregated into discrete work scopes. When defining the work scopes, the PM should consider grouping work scopes that are similar and that can be accomplished by a single bidder. For example, a D&D subproject may have the following procurement packages:

- Architect/Engineer Services,
- Equipment Procurement,
- Construction Management Services,
- Waste Management Services,
- Decontamination Operations, and
- Demolition Operations

The EG&G Procurement Department will assist the PM in establishing the type of subcontract appropriate to the work scope for each package. The types of subcontracts for services include fixed hourly labor rate, cost plus fixed fee (CPFF), cost plus award fee (CPAF), cost plus incentive fee (CPIF), fixed price, or fixed price incentive fee (FPIF). Equipment procurement is normally completed using fixed price or unit rate contracts. Considerable effort should be expended in determining the appropriate subcontracting mechanism, as it can greatly affect the work cost and schedule.

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6.0 OPERATIONS PLAN

Field operation guidance is found in the ER-IPP Operations Management. The following sections include additional guidance and clarification for D&D-specific field work.

Implementation of the SDP includes engineering during operations (analogous to Title III Services), conduct of D&D operations, waste management operations, emergency response and preparedness, and documentation and status reporting.

6.1 Engineering During Operations

Because the design of D&D systems and operations involves inherent uncertainty, the amount of engineering and inspection support during operations may be greater than that required for a similar construction project that does not involve D&D. This uncertainty includes success of decontamination operations, changes to assumed amounts of wastes generated, and characterization activities. The Detailed Design should include assumptions for the level of effort involved in these activities, as well as appropriate contingency funding for the potentially increasing levels of effort required to support these activities. Engineering during operations includes, but is not limited to:

- Technical and engineering support during D&D,
- Quality assurance activities related to characterization,
- Change documentation and recording of the operations, and
- Quality verification of the operations

Engineering and design changes during	1
D&D operations should be controlled	2
using approved change control and	3
configuration management procedures	4
Because valuable lessons are learned	5
during D&D subproject activities that can	6
be applied to other D&D subprojects, daily	7
field logs should be maintained. Weekly	8
reports and monthly subproject status	9
summaries should be prepared, submitted,	10
and maintained according to configuration	11
management practices (see ER-IPP	12
Configuration Management). Project files	13
containing this information should be	14
maintained to allow ready access by other	15
subproject PMs	16
	17
6.2 Management of D&D Field	18
Activities	19
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D&D activities will vary significantly from	21
one subproject to another. These activities	22
must be conducted according to the SDP	23
The PM will ensure that the subproject is	24
managed to the SDP baseline, and if	25
justified, will implement baseline changes	26
in accordance with change control and	27
configuration management procedures	28
	29
Field activity logs should be prepared	30
daily. A summary of activities should be	31
prepared by the field operations manager	32
on a weekly basis. Monthly status reports	33
summarizing the activities completed,	34
budget and schedule status, problems and	35
their resolution, and anticipated future	36
activities should be prepared to allow	37
summary reporting of planned and future	38
activities to EG&G and DOE management	39
	40
Each subproject must undergo an	41
independent assessment to verify that the	42
objectives of the subproject D&D activities	43
have been met. Therefore, operating	44
records, sampling and analysis records,	45
and waste management records must be in	46

sufficient detail to allow ready review, understanding, and evaluation of the processes, procedures, and results of the D&D activities

6.3 Field Waste Management and Minimization

The WMP will identify the appropriate waste management processes and opportunities for waste minimization during D&D activities. Waste management and waste minimization efforts should adhere to the WMP section within the SDP. However, because of unexpected conditions that may be encountered during operations, field operations must be flexible and allow for decision making regarding waste management and waste minimization. For example, the SDP may require that certain equipment be decontaminated until unrestricted release criteria are achieved. However, during operations it may be discussed that further decontamination would generate excessive liquid waste with little chance of achieving the release criteria. Expedited analyses to support field decisions should be completed by the project staff to ensure that cost/benefit and waste minimization aspects are considered. Records of analyses must be maintained in the project files.

Waste management records, including the WMP, reports, packaging records, waste characterization records, and waste storage records must be maintained according to configuration management, DOE, environmental, and other requirements for radioactive and hazardous wastes.

Appropriate controls will be in place during operations to prevent contamination of non-contaminated wastes by hazardous or radioactive contaminants. The WMP

will define these controls and protocols to ensure that uncontaminated materials are not being contaminated. Uncontaminated wastes will be disposed of properly in a sanitary landfill.

6.4 Emergency Response and Reporting

The SDP, Health and Safety Plan, and project procedures will define and incorporate the appropriate requirements for emergency preparedness, emergency response, and notification requirements for potential emergencies during operations. Emergencies may be safety-related, such as a fire or industrial accident, radiation-exposure-related, or related to the release of radiation or a spill of a regulated substance.

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7.0 QUALITY ASSURANCE

The basis or sources of quality assurance (QA) requirements are

- DOE Orders and Directives,
- EPA Regulations,
- CDPHE Regulations,
- RFETS QA Manual,
- RFETS Site-Wide Quality Assurance Project Plan (QAPjP) for CERCLA Remedial Investigation/Feasibility Studies and RCRA Facility Investigations/Corrective Measures Studies Activities, and
- Environmental Restoration Management Quality Assurance Program Description (QAPD)

Elements, criteria, and requirements that are potentially applicable to the ER MSA Project are promulgated by these entities EPA and CDPHE requirements apply to RA activities RFCA requirements apply only to RA activities addressed in the agreement

Section IV A of the RFCA specifies minimum quality elements that the quality program must include and references EPA QAMS-005/80, Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans Chapter IV Section 10 of DOE 5400 1, General Environmental Protection Program, specifies minimum elements that must be addressed by QA programs for DOE environmental protection programs DOE 5400 1 further states that environmental QA programs be developed consistent with

DOE Order 5700 6B, Quality Assurance, which has been superseded by DOE Order 5700 6C The RFETS QA Manual is based on DOE Order 5700 6C, Quality Assurance, and its requirements are satisfied by the QAPjP and the QAPD with specific regard to EPA QAMS-005/80

The DOE Office of Environmental Restoration and Waste Management (EM) has prepared a QA Requirements and Description (QARD) document that sets forth the QA requirements and guidance for QA plans (QAPs) in support of DOE environmental management programs, including the ER MSA Project at the RFETS The DOE EM QARD requires DOE organizations and contractors to develop, implement, and maintain a QAP as identified in DOE Order 5700 6C The QAPD, in conjunction with the QAPjP, meets the requirements of a QAP

D&D subproject-specific supplements to the QAPD and QAPjP will be prepared as necessary to ensure compliance with the intent of DOE Order 5700 6C and EPA QAMS-005/80

8.0 VERIFICATION AND CLOSEOUT

In order to release a decommissioned facility or site for use, with or without radiological restrictions, it is necessary to verify, and in some cases certify, that the decontamination has been completed according to DOE and regulatorily-approved criteria. It is essential that requirements for site certification be considered and that all requirements for site certification be integrated into the overall project planning process.

Additional documentation will be needed in addition to the above-referenced documents. These documents will include the final project report, the record of completion, and the project data package as required by DOE Orders 5820 2A and 4300 1C.

8.1 Verification of Attainment of Cleanup Standards

EG&G is ultimately responsible for ensuring that the D&D activities performed meet cleanup standards established for the subproject. EG&G and its subcontractors will be required to formally assess the effectiveness of D&D activities through sampling and analysis, D&D operations assessments and documentation, and an overall assessment of D&D activities. Once EG&G and its subcontractors have verified that D&D is complete and that cleanup standards have been achieved, the subproject will undergo a review by the independent verification contractor (IVC).

The D&D subproject PM will be responsible for ensuring that verification activities are performed in accordance with the SDP and verification SAP. The results

of the EG&G verification activities will be documented in the D&D Subproject Report. The following key topics should be included in the report:

- A summary of cleanup standards and how they were established,
- Changes to cleanup standards and justification for changes (risk reduction, worker protection, environmental regulations),
- A summary of D&D operations, including decontamination methods used, waste management history and summary, summary of project activities and impacts on achieving cleanup standards, summary of milestone and major activities completed to meet cleanup standards,
- Identification of areas where cleanup standards could not be achieved and corrective actions were taken to achieve cleanup standards,
- A summary of verification sampling and analysis,
- A summary of quality assurance methodology employed during D&D,
- The results and conclusions indicating that the facility meets cleanup standards, and
- A certification by EG&G that cleanup standards have been achieved.

Subproject verification will be conducted to validate the accuracy and completeness

of the field measurements and to attest to the credibility of the procedures followed during the cleanup and certification operations. The extent of subproject verification may vary and will typically involve document and procedure review, split-sample analysis, and spot survey checks. A number of factors, including types of cleanup, complexity of the operation, and various site-specific issues may be taken into consideration in determining the scope and intensity of the verification process for a specific subproject.

8.2 Subproject Certification

The formal certification process is initiated following verification of subproject completion by EG&G. The certification process will incorporate several aspects of the verification process. However, the implications of the certification process are not as broad-based as the verification process. The certification process will ensure that the resulting radiological, hazardous, and toxic contamination conditions are in compliance with established criteria, standards, and/or guidelines and that the public and the environment are protected.

The ultimate goal of any D&D action is to ensure that resulting radiological and (where appropriate) chemical conditions of the facility/activity comply with established criteria, standards, or guidelines, and that the public and the environment are thereby protected. Therefore, it is essential that the requirements of site certification be considered at the beginning of subprojects and that these requirements be integrated into the overall subproject on a site-by-site basis.

While data collection and preparation for

certification begin prior to D&D activities, the bulk of the effort is conducted during and after D&D activities have been completed. Environmental documentation, activity reports, decontamination control procedures, supportive sampling and analysis plans, and accurate subproject completion reports are essential to provide a record of cleanup activities and as a source of data for the certification process. As a result of the differences in the types of criteria and guidelines applied to various components subject to D&D activities, the requirements for verification activities may vary, depending on the D&D methodology applied.

Independent verification measures are typically imposed and/or implemented by DOE and follow verification by EG&G. DOE may contract an IVC to conduct the independent verification activities or may conduct the independent verification activities using personnel that have had no involvement in the D&D activities. The independent verification steps are as follows:

- Review of D&D specifications and plans, procedures, and supporting documentation,
- Onsite visits and surveys involving direct measurements and sampling and/or split-sample analyses, and
- Interviews with key site and operations personnel.

The independent verification shall determine if data are sufficient and if procedures have been followed to the degree necessary to certify that the D&D is complete. Compliance with criteria for decontamination and release of equipment, structures, or buildings is demonstrated by

field measurements and other appropriate methods. As appropriate, representative additional samples will be taken from the air, water, and residue samples that were analyzed in the field and will be used to support the confirmation of the site's condition.

If chemical contamination is present, and the site is remedied pursuant to CERCLA, the post-remedial action report should contain documentation necessary to support deletion of the site from the National Priority List (NPL). In such instances the report should contain, at a minimum:

- A brief description of outstanding construction items from the pre-final inspection and an indication that the items were resolved,
- A synopsis of the work defined in the Statement of Work (SOW) for the subproject and certification that the work was performed,
- An explanation of any modifications to the work in the SOW and a discussion of why these modifications were necessary for the project,
- Certification that the remedy is operational and functional, and
- Documentation necessary to support deletion of the site from the NPL.

[Note: For both radiological and non-radiological samples, all analytical efforts should include specific quality assurance and quality control requirements, which should set forth acceptance criteria for final data. The quality control results are validated by independent laboratory chemists and/or statisticians to ensure that

the data are of acceptable quality.]

The RCRA closure regulations require the removal and/or decontamination of all waste residues and contaminated structures, equipment, and soils. Waste generated as a result of the closure activities is to be managed as hazardous waste unless the provisions of Colorado regulation 6 CCR 1007-3, section 261 3(d) apply.

8.3 Final Radiological Survey

The radiation survey performed to meet site closure needs should be planned to ensure that compliance can be demonstrated with the desired level of confidence. A Sampling and Analysis Plan (SAP) relative to the radiological survey should be developed and implemented. The SAP will identify the types, frequencies, and locations of radiological measurements to be obtained. The primary purpose of the radiological SAP will be to assess the quantity and distribution of residual radioactivity. If chemical or toxic constituents are assumed to be present or are identified during the radiological screening, then provisions to address these contaminants are needed in the SAP.

8.4 Final D&D Subproject Report

Following completion of the planned decommissioning activities, a verification report will be prepared by the IVC (if required) for each site location, and the Final D&D Subproject Report will be prepared. The Final D&D Subproject Report will be made available to others through the Office of Scientific and Technical Information, in accordance with DOE Order 1430 1D - Scientific and Technical Information Management. The

Final D&D Subproject Report will include the following information

- Background information,
- Facility or site description,
- Decommissioning and remedial action objectives and work scope,
- A description of work performed including
 - project management,
 - project engineering,
 - site characterization,
 - alternatives assessment,
 - site preparation,
 - decommissioning operations,
 - waste disposal,
 - post-decommissioning radiological survey, and
 - post-decommissioning hazardous chemical condition,
- Cost and schedules,
- Waste volumes generated,
- Occupational exposure to personnel,
- Final facility or site condition,
- Lessons learned, conclusions, and recommendations,

- References, and 1
- Acronyms and abbreviations listing 2
- 8.5 Project/Subproject Data Package 3
- The Subproject Data Package will provide a complete history of the subproject A listing of all generated documentation will be maintained from inception to completion of the subproject Compilation of all pertinent project documentation will aid in generation of the Final D&D Subproject Report and will serve as a repository for valuable subproject information 4
- The Subproject Data Package will address the requirements of the D&D C and SDP, and will include the required information to prepare a Project Data Package in accordance with DOE Order 5820 2A, Sect V Key topics to be addressed include (but are not limited to) 5
- Record of Completion, 6
- Final Radiological and D&D Chemical Survey Report, 7
- The Final D&D Subproject Report, and 8
- Appropriate Public Notices 9
- 8 6 Subproject Closeout 10
- The closeout of a subproject involves a number of steps required to ensure proper termination of subproject activities These steps include completion of all contractual relationships, closing of contracts for file, closing of financial records and documents, obtaining necessary approvals, licenses, and permits, completing the safety analysis reports, establishing 11

operating procedures, and other activities
peculiar to the subproject

Subproject closeout is the final phase of a
decommissioning subproject. It begins at
the completion of physical
decommissioning, when it is believed that
the site meets the defined release criteria
for either restricted or unrestricted use.
Subproject closeout may be scheduled so
that some surveying is done while
decommissioning operations are still
ongoing in other areas of the site. If so,
measures are required to prevent spread of
contamination to already closed areas.
The purpose of the subproject closeout
phase is to verify that the site in its final
configuration meets the release
criteria/requirements established for the
subproject. Subproject closeout phase is
performed by means of surveys,
verification, and appropriate
documentation. The requirements for
documentation may be imposed by DOE or
the regulatory agency to avoid legal
ramifications.

The independent verification aspects are
tied into the subproject closeout phase to
provide an independent verification of the
owner's determination that the site
complies with release criteria, eliminating
any biased configurations that may occur.
Preparation of a subproject closeout
checklist is recommended to assist the
D&D manager in verifying completion of
all closeout activities. Key topics to be
addressed include (but are not limited to)

- Labor Force Closeout,
- Financial Closeout, and
- Document Retention

APPENDIX A
D&D ENVIRONMENTAL CHECKLIST

TO BE DEVELOPED